



SWIMMING POOL DEHUMIDIFIERS

SHH

SERIE



CE

TECHNICAL MANUAL

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The SHH manual, contains any information that is needed for a correct use of the equipment while safeguarding operator safety, according to what indicated in the actual directives on units safety.

AIM AND CONTENTS OF THIS MANUAL

This manual provides basic information on the installation, operation and maintenance off the SHH unit. It is addressed to machine operators and it enables them to use the equipment efficiently, even if they do not have any previous specific knowledge of it. This manual describes the characteristics of the equipment at the time it is being put on the market; therefore it may not capture later technological improvements introduced by HIDROS SRL as part of its constant endeavour to enhance the performance, ergonomics, safety and functionality of its products.

HOW TO KEEP THIS MANUAL

The manual must be always with the unit it refers to. It must be stored in a safe place, away from the dust and moisture. It must be accessible to all users who shall consult it any time they are in doubt on how to operate the equipment.

HIDROS SRL reserves the right to modify its products and related manuals without necessarily updating previous versions of the reference material. The customer shall store any updated copy of the manual or parts of it delivered by the manufacturer as an attachment to this manual.

HIDROS SRL is available to give any detailed information about this manual and to give information regarding the use and the maintenance of its own units.

GRAPHIC SYMBOLS



Indicates operations that can be dangerous for people and/or disrupts the correct operation of the equipment..



Indicates prohibited operations.








Indicates important information that the operator must follow in order to guarantee the correct operation of the equipment in complete safety

SAFETY LAWS

The units single components or the complete units produced by HIDROS have been designed according to the actual CE and national Directives. For the detailed list of the project technical Directives, refer to the CE declaration enclosed.

GENERAL SAFETY GUIDELINES

Before beginning to operate on SHH units every user must be perfectly knowledgeable about the functions of the equipment and its controls and must have read and understood the information container in this manual.

	It's strictly forbidden to remove and/or camper with any safety device.
	Any routine or not-routine maintenance operation shall be carried out when the equipment has been shut down, disconnected from electric and pneumatic power source and after its pneumatic system has been discharged.
	Do not put your hands or insert screwdrivers, spanners or other tools into moving parts of the equipment.
	The equipment supervisor and the maintenance man must receive training suitable for the performance of their tasks in safety
	Operators must know how to use personal protective devices and must know the accident-prevention guidelines contained in national and international laws and norms.

WORKERS' HEALTH AND SAFETY

The European Community has emanated some Directives about worker's safety and health which the employers have to respect and make the others respect. For the detailed list, see the CE declaration enclosed.

- | | |
|--|---|
| | Do not tamper with or replace parts of the equipment without the specific consent of the manufacturer. The manufacturer shall have no responsibility whatsoever in case of unauthorised operations. |
| | Using components, expendable materials or spare parts that do not correspond to those recommended by the manufacturer and/or listed in this manual may be dangerous for the operators and/or damage the equipment |
| | The operator's workplace must be kept clean, tidy and free from objects that may hamper free movements. Appropriate lighting of the work place shall be provided so as to allow the operator to carry out the required operations safely. Poor or too strong lighting can cause risks. |
| | Ensure that work places are always adequately ventilated and that aspirators are working, in good condition and in compliance with the requirements of the laws in force... |

PERSONAL PROTECTIVE EQUIPMENT

When operating and maintaining the SHH unit, use the following personal protective equipment.

- | | |
|--|--|
| | Equipment: people who make maintenance or work with the unit, must wear an equipment in accordance with the safety Directives. They must wear accident prevention shoes with anti-slip sole where the paving is slippery. |
| | Gloves: During the cleanings and the maintenance operations, it's necessary the use of appropriate gloves. In case of gas recharge, it's compulsory the use of appropriate gloves to avoid the risk of freezing. |
| | Mask and goggles: Respiratory protection (mask) and eye protection (goggles) should be used during cleaning and maintenance operations. |

SAFETY SIGNS

The equipment features the following safety signs, which must be complied with:

- | | |
|--|------------------------------|
| | General hazard |
| | Electric shock hazard |

TECHNICAL DESCRIPTION

SHH dehumidifiers series are high-performances units especially designed for swimming pool applications or where humidity level should be controlled or water vapour condensation should be prevented.

Frame

All SHH units are made from hot-galvanised thick sheet metal, painted with polyurethane powder enamel at 180°C to ensure the best resistance against the atmospheric agents. The frame is self-supporting with removable panels. The drip tray is present standard in all SHH units and it's in stainless steel. The colour of the units is RAL 7035

Refrigerant circuit

The refrigerant gas used in these units is R407C. The refrigerant circuit is made by using international primary brands components and according to ISO 97/23 concerning welding procedures. The refrigerant circuit includes:

- sight glass,
- filter drier,
- thermal expansion valve with external equalizer,
- Schrader valves for maintenance and control,
- pressure safety device (according to PED regulation)

Compressors

The compressor is scroll type with crankcase heater and thermal overload protection by a klixon embedded in the motor winding. It's mounted on rubber vibration dampers and, by request, it can be supplied with some jackets to reduce the noise (accessory). The crankcase heater, when present, is always powered when the compressor is in stand-by. The inspection is possible through the frontal panel of the unit.

Condensers and evaporators

Condensers and evaporators are made of copper pipes and aluminium fins. All evaporators are painted with epoxy powders to prevent corrosion problem due to their use in aggressive environments. The diameter of the copper pipes is 3/8" and the thickness of the aluminium fins is 0,1 mm. The tubes are mechanically expanded into the aluminium fins to improve the heat exchange factor. The geometry of these heat exchangers guarantees a low air side pressure drop and then the use of low rotation (and low noise emission) fans. All units are supplied, standard, with a Stainless steel drip tray and all evaporators are supplied with a temperature sensor used as automatic defrost probe.

Fans

The fan is centrifugal type. It's statically and dynamically balanced and supplied complete of the safety fan guard according to EN 294. It's mounted on the unit frame by interposition of rubber vibration dampers. The electric motor is at 4 poles (about 1500 rpm). Connected to the fan by belts and pulleys and it's equipped of an integrated thermal overload protection. The protection class of the motors is IP 54.

Air Filter

It's supplied standard with the unit. It's made of filtering material in synthetic fibre without electrostatic charge. It can be removed for differential disposal, class G3, according to EN 779:2002

Electric box

The electric switch board is made according to electromagnetic compatibility norms CEE 73/23 and 89/336. The accessibility to the board is possible after removing the front panel of the unit and the OFF positioning of the main switch. The moisture protection degree is IP44. In all SHH units are installed, standard, the compressors sequence relay who disables the operation of the compressor in case the power supply phase sequence is not the correct one (scroll compressors in fact, can be damaged if they rotate reverse wise). The following components are also standard installed: main switch, magnetic-thermal switches (as a protection of the fans), compressors fuses, control circuit automatic breakers, compressor contactors. The terminal board is also supplied with voltage free contacts for remote ON-OFF.

Microprocessors

All SHH units are supplied standard with microprocessor controls. The microprocessor controls the following functions: compressor timing, automatic defrost cycles, the management of fresh and exhaust air, post heating valve and alarms. An appropriate LCD display shows the operation mode of the unit, set point and alarms

Control and protection devices

All units are supplied with the following control and protection devices: defrost thermostat, who signals to the microprocessor control that a defrost cycle is needed and controls its termination, high pressure switch with manual reset, low pressure switch with automatic reset, high pressure safety valve, compressor thermal overload protection, fans thermal overload protection

Test

All the units are fully assembled and wired at the factory, carefully evacuated and dried after leak tests under pressure and then charged with refrigerant R407C. They are all fully operational tested before shipment. They all conform to European Directives and are individually marked with the CE label and provided with Conformity Declaration

ACCESSORIES

Remote mechanical hygostat:	Supplied with a regulation knob and working range from 30% to 100% with precision of 3%.
Condensate discharge pump:	Centrifugal package type, with high available static pressure, it is supplied with water tank, one way valve and floating sensor device. The pump is supplied with an alarm contact who stops the compressor operation in case the pump does not run properly.
Partial heat recovery:	It is used to produce hot sanitary water or to warm up the pool; it is made of AISI 316 stainless steel braze-welded plates type with molybdenum alloy; for its operation it is required a water connection to sanitary water or pool water.
Hot water coil:	The hot water coil is made of copper pipes and aluminium fins. The diameter of the copper pipes is 3/8" and the thickness of the aluminium fins is 0,1 mm. The tubes are mechanically expanded into the aluminium fins to improve the heat exchange factor.
On/Off 3 way valve kit:	To be supplied to control the water flow in the hot water coil. The valve is controlled by the unit microprocessor.
Version for outdoor installation:	Suitable for outdoor installation.
Air filter with ducted installation:	Complete with EU2 efficiency air filter which can be removed by the side and frame for ducted installation.
Low noise version (LS):	The low noise version LS includes the complete insulation of the compressor vane with high density sound absorption material.

TECHNICAL DATA

Mod.		330	400	560	740	940
Refrigerant		R407C	R407C	R407C	R407C	R407C
Dehumidification capacity ⁽¹⁾	l/24h	329,9	414,8	564,1	738,5	937,3
Cooling capacity ⁽²⁾	kW	---	---	---	---	---
Compressor input power ⁽¹⁾	kW	5,3	6,6	8,7	11,7	15,6
Maximum input power ⁽¹⁾	kW	5,8	7,3	9,5	12,8	17,1
Partial heat recovery ⁽³⁾	kW	4,8	5,8	8	10,5	13,5
Hot water coil ⁽⁴⁾	kW	21,8	21,8	36,2	46	55,7
Nominal input current ⁽¹⁾	A	13,5	15,3	16	19,4	25,2
Maximum input current ⁽²⁾	A	14,2	16,5	18,4	21,2	24,7
Power supply	V/Ph/Hz	400/3+N/50				
Total air flow	m3/s	1,055	1,055	1,430	1,903	2,277
Supply fan available static pressure	Pa	230	230	250	250	250
Compressor	tipo	SCROLL				
	n°	1	1	1	1	1
Refrigerants circuits	n°	1	1	1	1	1
Steppower control		1	1	1	1	1
Sound power level ⁽⁵⁾	dB(A)	74	75	79	80	81
Sound pressure level ⁽⁶⁾	dB(A)	67	69	72	73	74
Length	mm	1004	1004	1630	1630	1630
Width	mm	635	635	1010	1010	1010
Height	mm	1283	1283	1410	1410	1410
Weight	Kg	195	209	405	421	450

Performances are referred to the following conditions:

(1) Ambient temperature 30 °C relative humidity 80%.

(2) Ambient temperature 35 °C relative humidity 80%;

(3) Water temperature inlet/outlet 25/30°C.

(4) Room temperature 32°C; Water temperature 80/70°C.

(5) Sound power level calculated according to ISO 3746.

(6) Sound pressure level measured in free field, at 1 mt from the unit, directional factor Q=2 according to ISO 3746.

**SHH 330
PERFORMANCE TABLES**

Ambient temperature	Dehumidification capacity	Input Power	Air temperature increase	Thermal load in the room
	[l/24h]	[kW]	[°C]	[kW]
	Relative humidity 50%			
10°C	47,3	2,8	3,2	4,6
15°C	58,0	3,0	3,6	5,1
20°C	84,8	3,4	4,5	6,3
25°C	122,3	3,8	5,8	7,9
30°C	158,4	4,4	7,0	9,5
35°C	190,1	4,9	8,1	10,9

Ambient temperature	Dehumidification capacity	Input Power	Air temperature increase	Thermal load in the room
	[l/24h]	[kW]	[°C]	[kW]
	Relative humidity 60%			
10°C	62,2	2,8	3,6	5,1
15°C	86,1	3,1	4,3	6,1
20°C	119,1	3,5	5,4	7,4
25°C	167,7	4,0	6,9	9,3
30°C	215,9	4,5	8,4	11,2
35°C	255,7	5,0	9,7	12,9

Ambient temperature	Dehumidification capacity	Input Power	Air temperature increase	Thermal load in the room
	[l/24h]	[kW]	[°C]	[kW]
	Relative humidity 70%			
10°C	80,2	2,9	4,0	5,7
15°C	113,3	3,2	5,0	7,0
20°C	158,9	3,6	6,4	8,7
25°C	210,7	4,1	7,9	10,7
30°C	269,9	4,7	9,7	13,0
35°C	306,9	5,2	11,0	14,5

Ambient temperature	Dehumidification capacity	Input Power	Air temperature increase	Thermal load in the room
	[l/24h]	[kW]	[°C]	[kW]
	Relative humidity 80%			
10°C	98,3	2,9	4,4	6,2
15°C	142,2	3,2	5,7	7,8
20°C	198,7	3,7	7,3	9,9
25°C	258,0	4,2	9,1	12,1
30°C	329,9	4,8	11,2	14,8
35°C	370,1	5,3	12,5	16,5

NOTE Shadowed fields refer to nominal condition capacities.

**SHH 400
PERFORMANCE TABLES**

Ambient temperature	Dehumidification capacity	Input Power	Air temperature increase	Thermal load in the room
	[l/24h]	[kW]	[°C]	[kW]
	Relative humidity 50%			
10°C	60,8	3,5	3,9	5,8
15°C	74,5	3,7	4,4	6,4
20°C	108,4	4,3	5,5	7,9
25°C	155,4	4,9	6,9	9,9
30°C	200,4	5,6	8,4	11,9
35°C	240,4	6,2	9,7	13,6

Ambient temperature	Dehumidification capacity	Input Power	Air temperature increase	Thermal load in the room
	[l/24h]	[kW]	[°C]	[kW]
	Relative humidity 60%			
10°C	80,0	3,5	4,3	6,3
15°C	110,3	3,9	5,2	7,6
20°C	151,6	4,4	6,5	9,3
25°C	212,5	5,0	8,3	11,7
30°C	272,4	5,8	10,1	14,1
35°C	322,5	6,4	11,6	16,2

Ambient temperature	Dehumidification capacity	Input Power	Air temperature increase	Thermal load in the room
	[l/24h]	[kW]	[°C]	[kW]
	Relative humidity 70%			
10°C	103,0	3,6	4,9	7,1
15°C	144,7	4,0	6,1	8,7
20°C	201,9	4,6	7,7	10,9
25°C	266,5	5,2	9,6	13,4
30°C	340,1	6,0	11,7	16,3
35°C	386,7	6,6	13,2	18,3

Ambient temperature	Dehumidification capacity	Input Power	Air temperature increase	Thermal load in the room
	[l/24h]	[kW]	[°C]	[kW]
	Relative humidity 80%			
10°C	126,2	3,6	5,4	7,7
15°C	181,3	4,1	6,9	9,8
20°C	251,9	4,7	8,9	12,4
25°C	325,6	5,3	10,9	15,2
30°C	414,8	6,1	13,4	18,6
35°C	465,2	6,8	15,0	20,7

NOTE Shadowed fields refer to nominal condition capacities.

**SHH 560
PERFORMANCE TABLES**

Ambient temperature	Dehumidification capacity	Input Power	Air temperature increase	Thermal load in the room
	[l/24h]	[kW]	[°C]	[kW]
	Relative humidity 50%			
10°C	83,0	4,9	4,2	8,0
15°C	101,5	5,2	4,7	8,9
20°C	147,2	5,8	5,8	10,8
25°C	210,7	6,5	7,3	13,4
30°C	271,3	7,4	8,8	16,0
35°C	324,2	8,1	10,1	18,2

Ambient temperature	Dehumidification capacity	Input Power	Air temperature increase	Thermal load in the room
	[l/24h]	[kW]	[°C]	[kW]
	Relative humidity 60%			
10°C	109,3	4,9	4,6	8,8
15°C	150,2	5,3	5,6	10,4
20°C	206,2	5,9	6,8	12,6
25°C	288,6	6,7	8,6	15,7
30°C	369,5	7,5	10,5	18,9
35°C	435,9	8,3	12,0	21,6

Ambient temperature	Dehumidification capacity	Input Power	Air temperature increase	Thermal load in the room
	[l/24h]	[kW]	[°C]	[kW]
	Relative humidity 70%			
10°C	140,6	5,0	5,2	9,8
15°C	197,1	5,5	6,4	11,9
20°C	247,5	6,1	8,1	14,8
25°C	362,0	6,9	10,0	18,1
30°C	461,6	7,7	12,1	21,8
35°C	522,8	8,6	13,6	24,4

Ambient temperature	Dehumidification capacity	Input Power	Air temperature increase	Thermal load in the room
	[l/24h]	[kW]	[°C]	[kW]
	Relative humidity 80%			
10°C	172,3	5,0	5,7	10,7
15°C	247,0	5,6	7,3	13,4
20°C	342,8	6,2	8,1	14,8
25°C	442,8	7,0	11,4	20,5
30°C	564,1	7,9	13,9	24,9
35°C	630,5	8,7	15,5	27,6

NOTE Shadowed fields refer to nominal condition capacities.

**SHH 740
PERFORMANCE TABLES**

Ambient temperature	Dehumidification capacity	Input Power	Air temperature increase	Thermal load in the room
	[l/24h]	[kW]	[°C]	[kW]
	Relative humidity 50%			
10°C	113,5	6,2	4,1	10,5
15°C	138,2	6,6	4,6	11,6
20°C	198,0	7,4	5,7	14,2
25°C	280,5	8,4	7,1	17,6
30°C	358,5	9,5	8,6	20,9
35°C	427,9	10,5	9,9	24,0

Ambient temperature	Dehumidification capacity	Input Power	Air temperature increase	Thermal load in the room
	[l/24h]	[kW]	[°C]	[kW]
	Relative humidity 60%			
10°C	149,4	6,2	4,5	11,6
15°C	203,4	6,7	5,5	13,7
20°C	276,1	7,5	6,7	16,6
25°C	382,7	8,5	8,5	20,7
30°C	486,5	9,7	10,3	24,8
35°C	573,3	10,8	11,8	28,4

Ambient temperature	Dehumidification capacity	Input Power	Air temperature increase	Thermal load in the room
	[l/24h]	[kW]	[°C]	[kW]
	Relative humidity 70%			
10°C	191,6	6,3	5,1	13,0
15°C	265,7	7,0	6,3	15,7
20°C	366,3	7,8	7,9	19,4
25°C	478,7	8,8	9,8	23,7
30°C	606,2	10,0	11,9	28,6
35°C	686,2	11,1	13,4	32,0

Ambient temperature	Dehumidification capacity	Input Power	Air temperature increase	Thermal load in the room
	[l/24h]	[kW]	[°C]	[kW]
	Relative humidity 80%			
10°C	234,9	6,3	5,7	14,2
15°C	331,8	7,1	7,2	17,8
20°C	455,4	7,9	9,1	22,2
25°C	583,5	9,0	11,2	26,9
30°C	738,5	10,2	13,6	32,6
35°C	824,8	11,3	15,2	36,2

NOTE Shadowed fields refer to nominal condition capacities.

**SHH 940
PERFORMANCE TABLES**

Ambient temperature	Dehumidification capacity	Input Power	Air temperature increase	Thermal load in the room
	[l/24h]	[kW]	[°C]	[kW]
	Relative humidity 50%			
10°C	146,0	8,0	4,4	13,7
15°C	178,0	8,6	5,0	15,2
20°C	254,4	9,6	6,1	18,5
25°C	359,7	11,0	7,7	22,8
30°C	458,3	12,5	9,3	27,2
35°C	547,3	13,8	10,7	31,1

Ambient temperature	Dehumidification capacity	Input Power	Air temperature increase	Thermal load in the room
	[l/24h]	[kW]	[°C]	[kW]
	Relative humidity 60%			
10°C	192,0	8,0	4,9	15,1
15°C	261,1	8,8	5,9	17,8
20°C	353,7	9,9	7,3	21,6
25°C	489,1	11,2	9,2	26,8
30°C	620,1	12,7	11,1	32,1
35°C	731,3	14,1	12,7	36,7

Ambient temperature	Dehumidification capacity	Input Power	Air temperature increase	Thermal load in the room
	[l/24h]	[kW]	[°C]	[kW]
	Relative humidity 70%			
10°C	246,4	8,3	5,6	16,9
15°C	340,7	9,1	6,9	20,5
20°C	468,5	10,2	8,6	25,2
25°C	610,9	11,6	10,6	30,7
30°C	771,6	13,1	12,8	36,9
35°C	874,0	14,6	14,4	41,3

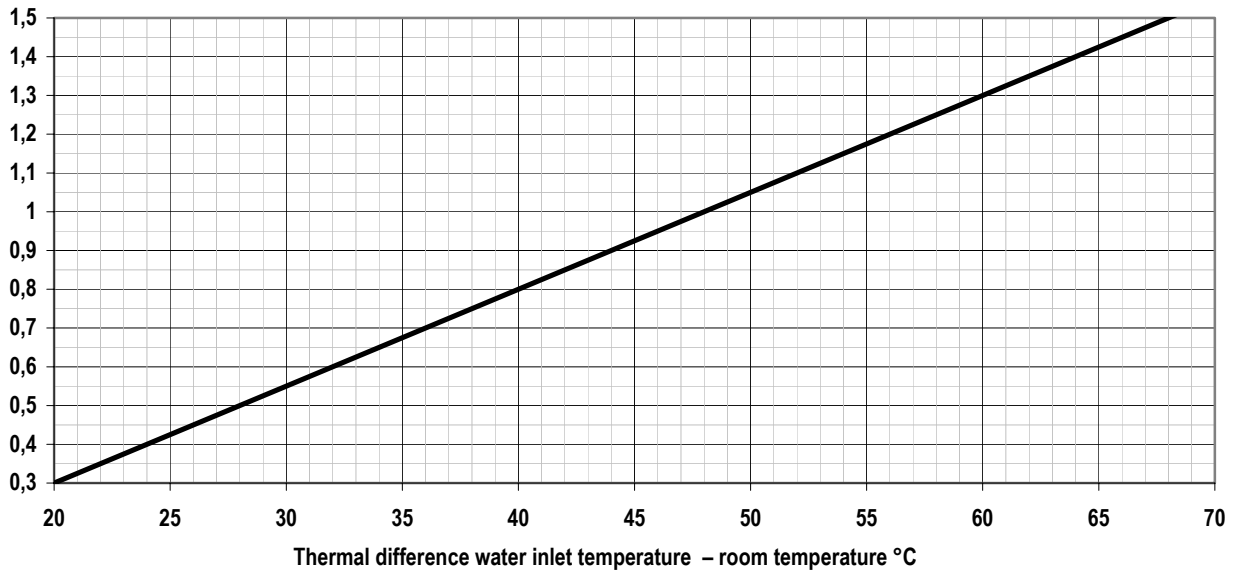
Ambient temperature	Dehumidification capacity	Input Power	Air temperature increase	Thermal load in the room
	[l/24h]	[kW]	[°C]	[kW]
	Relative humidity 80%			
10°C	302,0	8,3	6,1	18,5
15°C	424,7	9,3	7,8	23,0
20°C	580,8	10,4	9,8	28,7
25°C	742,4	11,8	12,0	34,7
30°C	937,3	13,4	14,6	41,9
35°C	1047,8	14,9	16,3	46,6

NOTE Shadowed fields refer to nominal condition capacities.

HOT WATER COIL (ACCESSORY)

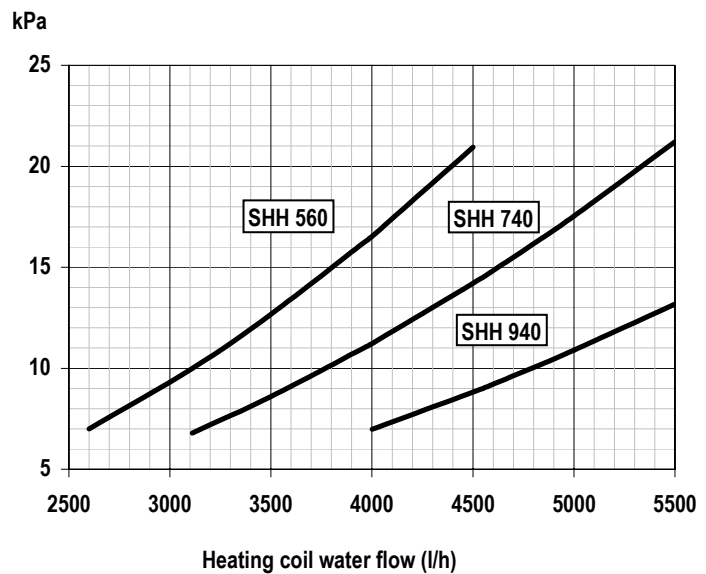
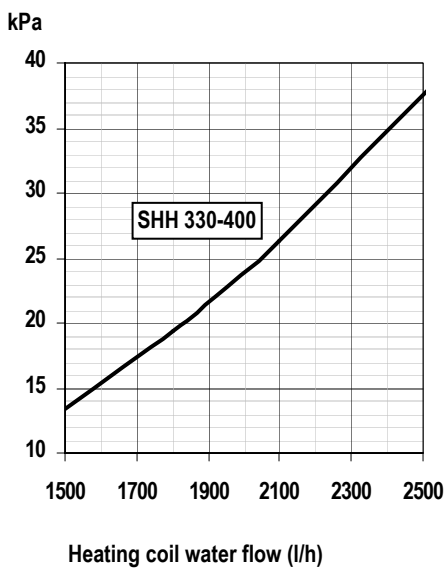
Mod.		330	400	560	740	940
Hot water coil capacity	kW	21,8	21,8	36,2	46	55,7
Water flow	l/h	1920	1920	3110	3960	4800
Water pressure drops	kPa	22	22	10	11	10

Nominal data are referred to room temperature 32°C and water temperature 80/70°C .



The hot water coil capacity in different conditions can be obtained multiplying the nominal capacity (See above), by the correction factor indicated in the table.

WATER PRESSURE DROPS

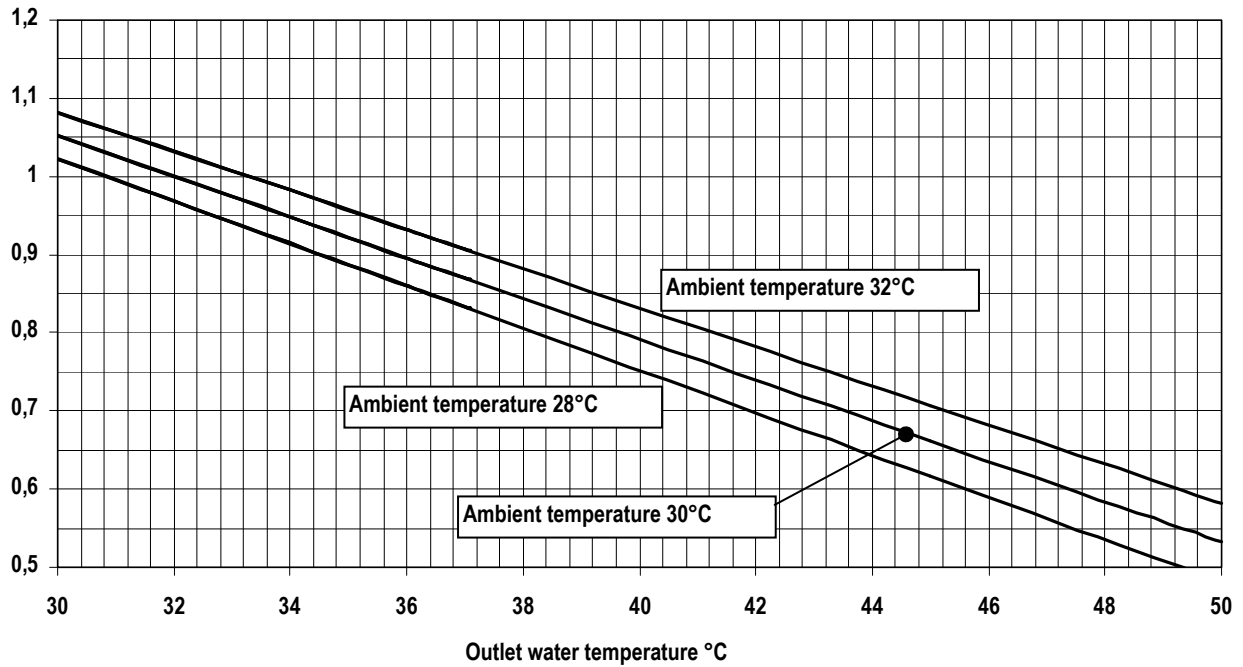


PARTIAL HEAT RECOVERY (ACCESSORY)

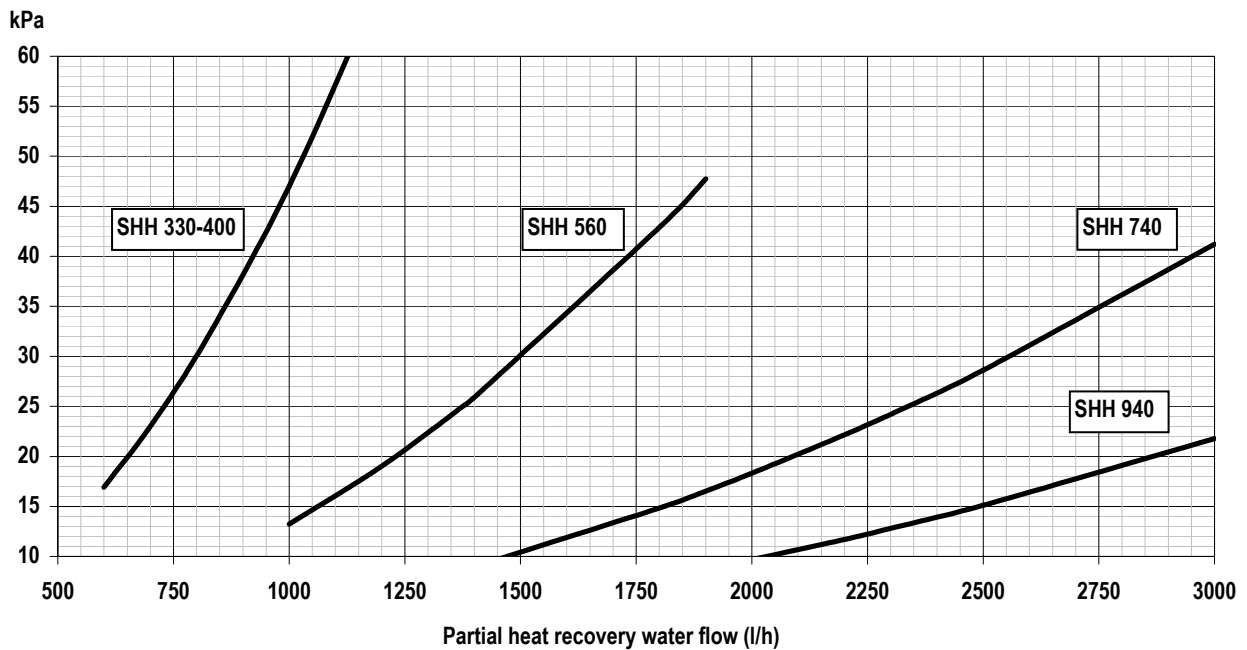
Mod.		330	400	560	740	940
Partial heat recovery nominal capacity	kW	4,8	5,8	8,0	10,5	13,5
Water flow	l/h	820	1000	1380	1810	2320
Water pressure drops	kPa	32	47	25	15	13

The nominal value refers to an ambient temperature of 30°C and outlet water temperature of 32°C (Dt 5°C).

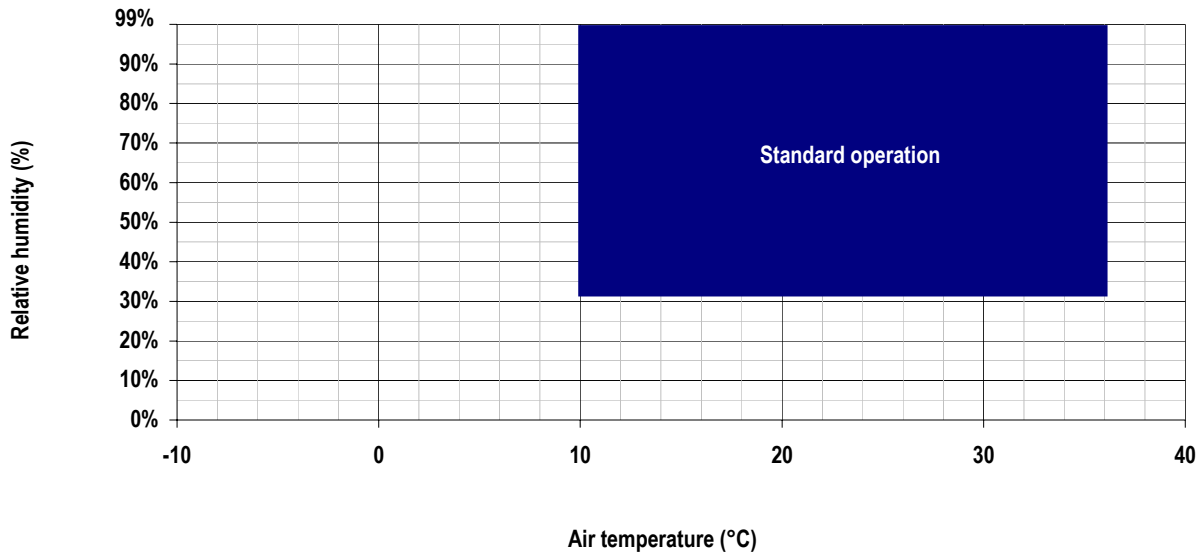
The heat recovery capacity in different conditions can be obtained multiplying the nominal capacity (See above), by the correction factor indicated in the table.



Water side pressure drops



OPERATION LIMITS



Ambient temperatures

SHH units are designed to operate with ambient temperatures from 10°C to 36°C, relative humidity from 50% to 99%



WARNING: The units **MUST** be used within the operation limit indicated in the diagrams (see above). the warranty will be invalidated if the units are used in ambient conditions outside the limits reported. If there is the necessity to operate in different conditions, please contact our technical office

SOUND DATA STANDARD VERSIONS											
Mod.	Octave band (Hz)								Lw		Lp
	63	125	250	500	1K	2K	4K	8K	dB	dB(A)	dB(A)
	dB	dB	dB	dB	dB	dB	dB	dB			
330	88,1	79,3	73,2	71,7	70,6	65,2	61,8	52,7	88,9	75	67
400	90,1	81,3	75,2	73,7	72,6	67,2	63,8	54,7	90,9	77	69
560	93,1	84,3	78,2	76,7	75,6	70,2	66,8	57,7	93,9	80	72
740	94,1	85,3	79,2	77,7	76,6	71,2	67,8	58,7	94,9	81	73
940	95,1	86,3	80,2	78,7	77,6	72,2	68,8	59,7	95,9	82	74

Lw: Sound power level according to ISO 3746.

Lp1: Sound pressure level measured at 1 mt from the unit in free field conditions direction factor Q=2 according to ISO 3746.



WARNING: The sound pressure level of the Low noise versions with compressors vane insulation is approx. 1,5 dB(A) lower than the equivalent standard versions.

SAFETY DEVICES

DEFROSTING

The frost on the coil, obstructs the air flow, reduces the available exchange area and consequently the unit performances and can seriously damage the system. All the units are supplied, standard, with a control which defrost automatically the heat exchanger if necessary. This control provides a temperature probe (defrost thermostat) on the unit evaporator. When the defrost cycle is required, the microprocessor control (according to set parameters) starts working (the yellow led turns on), the compressor is switched off while the fan keeps on working. At the end of the defrost cycle, there is the dripping time (the green led starts flashing)

HYGROSTAT (optional)

Hygrostat enables or disables unit operation depending on the humidity value desired.

To verify its correct operation, rotate the control knob clock wise (or set the desired value through the instrument keyboard if a keyboard instrument should be present) and set the humidity desired value close to lower limit. At this point verify that fan and compressor (after a time delay) will be started in sequence. Verify as well that the unit is stopped when humidity set is reached

THERMOSTAT (optional)

The thermostat is used when the unit is supplied with hot water coil.

To verify its correct operation, rotate the control knob clock wise (or set the desired value through the instrument keyboard if a keyboard instrument should be present) and set the temperature desired value close to lower limit. At this point verify the fan is all the time running and that compressor, after a time delay, is started.

Verify as well that the compressor is stopped when temperature set is reached.

HIGH PRESSURE SWITCH

The high pressure switch stops the unit when the condensing pressure is higher than the set value. The restart is manual (you need to press the button on the pressure switch) and it can be carried out only when the pressure is under the value indicated by the differential set (see table below).

LOW PRESSURE SWITCH

The low pressure switch stops the unit when the evaporation pressure is lower than the set value. The restart is automatic and it is only possible when the pressure back over the value indicated by the differential set (see table below).

DEFROST THERMOSTAT

It's a device which signals to the electronic control, the necessity to make the defrost cycle. Once the defrost cycle is activated, the defrost thermostat determines also its conclusion

SAFETY DEVICE SETTING

Device		Set-point	Differential	Reset type
Antifreeze thermostat	°C	1	3	MANUAL
High pressure switch	Bar	26	7,7	MANUAL
Low pressure switch	Bar	0,7	1	MANUAL

ELECTRICAL DATA

Power supply	V/~/Hz	400 / 3+N/ 50	Control circuit	V/~/Hz	24 / 1 / 50
Auxiliary circuit	V/~/Hz	230 / 1 / 50	Fans power supply	V/~/Hz	400 / 3 / 50*

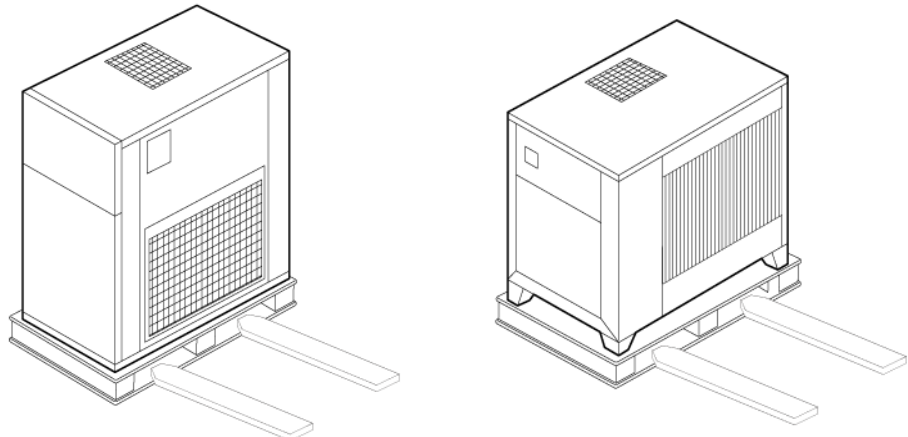
* 230/1/50 for SHH 330 and 400.

INSPECTION

When installing or servicing the unit, it is necessary to strictly follow the rules reported on this manual, to conform to all the specifications of the labels on the unit, and to take any possible precautions of the case. Not observing the rules reported on this manual can create dangerous situations. After receiving the unit, immediately check its integrity. The unit left the factory in perfect condition; any eventual damage must be questioned to the carrier and recorded on the Delivery Note before it is signed. HIDROS must be informed, within 8 days, of the extent of the damage. The Customer should prepare a written statement of any severe damage.

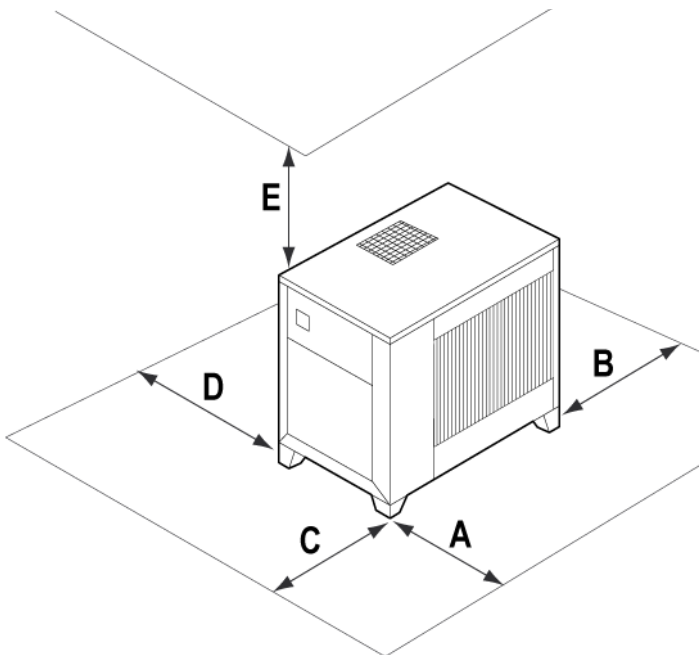
LIFTING AND HANDLING

When unloading the unit, it is highly recommended to avoid any sudden move in order to protect refrigerant circuit, copper tubes or any other unit component. Units can be lifted by using a forklift or, in alternative, using belts, being sure that the method of lifting does not damage the lateral panels and the cover. It is important to keep the unit horizontal at all time to avoid damages to the internal components.



LOCATION AND MINIMUM TECHNICAL CLEARANCES

SHH units are designed for internal installation; it is advisable to create a proper basement, with a size similar to unit foot-print. Unit vibration level is very low: it is advisable however, to fit a rigid rubber band between basement and unit base-frame. If it is the case, it is possible to install anti-vibration mounts (spring or rubber), to keep vibrations at a very low level. Absolute care must be taken to ensure adequate minimum technical clearances, necessary to guarantee checking and maintenance operation. For these reasons it is necessary to observe the clearances indicated in the below table.



Mod	A	B	C	D	E
330	1000	1000	800	1000	3000
400	1000	1000	800	1000	3000
560	1000	1000	800	800	3000
740	1000	1000	800	800	3000
940	1000	1000	800	800	3000



WARNING: The unit should be installed so that maintenance and/or repair services be possible. The warranty does not cover costs due to lifting apparatus, platforms or other lifting systems required by the warranty interventions



WARNING: All the maintenance operation must be done by **TRAINED PEOPLE** only.



WARNING: Before every operation of servicing on the unit, be sure that the electric supply is disconnected.



WARNING: Inside the unit some moving components are present. Be very careful when operating in their surroundings even if the electric supply is disconnected.



WARNING: The top shell and discharge line of compressor are usually at high temperature level. Be very careful when operating in their surroundings.

WARNING: Aluminium coil fins are very sharp and can cause serious wounds. Be very careful when operating in their surroundings.



WARNING: After servicing operation close the unit with cover panels, fixing them with locking screws.

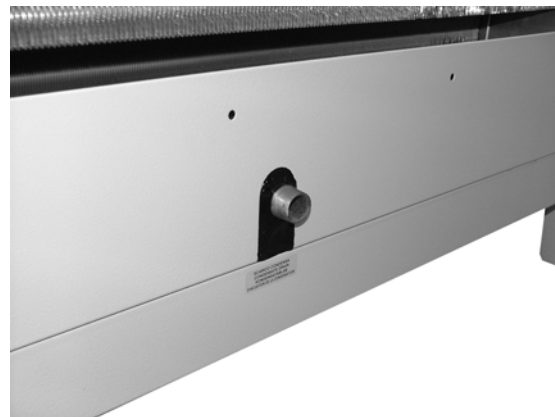
CONDENSATE DRAINING CONNECTIONS

Condensate draining should be done with a rubber pipe passing through the condensate draining connection located on the suction side of the unit. The discharge hole is located inside the unit and with a 3/4" female thread diameter. On the condensate discharge pipe it must be installed a syphon with a minimum height equal to the suction pressure of the fan.

SHH330-400



SHH 560-740-940



PARTIAL HEAT RECOVERY HYDRAULIC CONNECTIONS (option)

For units provided with partial heat recovery (desuperheater), hydraulic connections are 3/4" female threaded type. Partial heat recovery allows to reject a part of the heat produced by the unit to the swimming pool water, thus enabling neutral air temperature operation. In the partial heat recovery hydraulic circuit a circulating pump should be present (device not included).

DUCT CONNECTION

All the units are provided with a centrifugal fan that can be ducted. If supply only should be ducted, a flanged connection with overall dimensions larger than discharge hole located on the top of the unit should be used (please refer to unit dimensional drawing). In case also the suction side should be ducted it is necessary to connect the return duct with a flange having the same dimensions of the filter frame (See next picture).

SHH330-400**SHH 560-740-940**

WARNING: It is compulsory to install an air filter on the unit suction side; unit without filter can have un proper operation or be damaged. The presence of the filter is to be considered mandatory; warranty will no longer be valid if it is removed.



WARNING: When ductworks are connected it is **IMPORTANT** to check if the airspeed through the evaporator is around 1,5÷ 2 m/s. This parameter allow the unit to operate with the maximum efficiency; so an airspeed over than 2 m/s should never been exceeded.

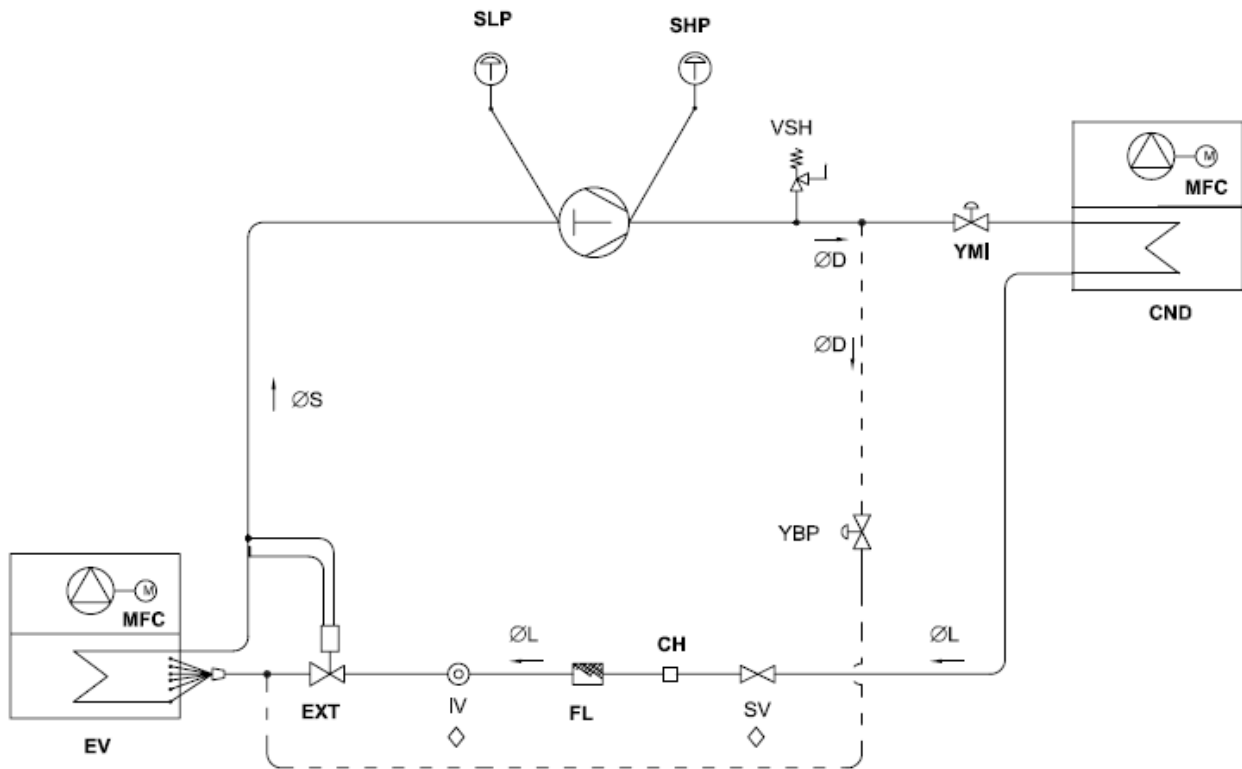
HOW TO REMOVE FILTERS

SHH units are supplied standard with a removable G3 filter ; (see picture) the filters can be removed by sliding laterally the cells after removal of the fixing knobs.

HOT WATER COIL CONNECTIONS (ACCESSORY)



REFRIGERANT LAY-OUT



CND	Condenser	FL	Liquid line filter
CH	Pressure plug	SV	Manual valve
EXT	Expansion valve	MFC	Centrifugal fan
EV	Evaporator	LR	Liquid receiver
SHP	High pressure switch	MFC	Fan
YBP	Hot gas by pass valve	◇	Optional

ELECTRICAL CONNECTIONS

The power supply must correspond to the electric nominal data (tension, phases, frequency) reported on the label in the front panel of the unit. Power connections must be made in accordance to the wiring diagram enclosed with the unit and in accordance to the norms in force. Power cable and line protection must be sized according to the specification reported on the wiring diagram enclosed with the unit.



WARNING: The line voltage fluctuations can not be more than $\pm 5\%$ of the nominal value, while the voltage unbalance between one phase and another can not exceed 2%. If those tolerances should not be respected, please contact our Company.



WARNING: Electric supply must be in the limits shown: in the opposite case warranty will terminate immediately. Before every operation on the electric section, be sure that the electric supply is disconnected.

START UP

Before start-up

- Check that all power cables are properly connected and all terminals are hardly fixed.
- The voltage at the phase R S T is the one shown in the unit labels.
- Check that there is not any refrigerant leakage.
- Check that crankcase heaters are powered correctly.
- Check that all water connections are properly installed and all indications on unit labels are observed.
- Before proceeding to start up check that all the cover panels are re-located in the proper position and locked with fastening screws.



WARNING: Crankcase heaters must be powered at least 12 hours before start up by closing the main switch (heaters are automatically supplied when main switch is closed). The crankcase heaters are working properly if after some minutes the compressor crankcase temperature is about $10\div 15^{\circ}\text{C}$ higher than ambient temperature.



WARNING: Never switch off the unit for temporary stop.



WARNING: Never modify internal wiring connections; warranty will be invalidated.

Start up

Before proceeding to start up close the main switch.

All the units are provided with microprocessor control that manages all the various functions of the unit.

The functions described below are applied both for local board control and remote panel control.

To start the unit turn the green switch ON (the inner led will light up), then activate hygrostat by rotating the knob o by pressing the instrument keyboard depending on the type of instrument installed;



If the green electrical supply led should not light up (see following page), please reverse two electrical phases on the connection to the main switch.

Controls during unit operation

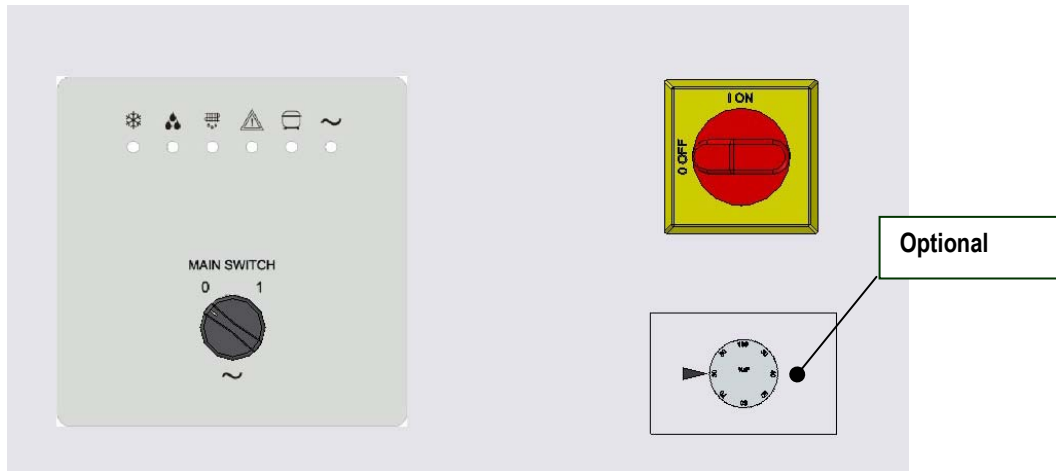
- Check the fans rotation. If the rotation is incorrect, disconnect the main switch and change over any two phases of the incoming main supply to reverse motor rotation (only for units with three-phase fan motors).
- Check that the air speed through the evaporator coil is not higher than 1,5 2 m/s to grant a high dehumidification performance.



ATTENTION: If the air speeds through the evaporating coil exceeds 2 m/s, the dehumidification capacity of the unit is highly reduced and the required environment conditions can not be respected !!!

CONTROL PANEL

Units are provided with signalling lighting led that indicate unit operational status. Below is reported a brief description of their meaning.



ATTENTION: the hygostat and the thermostat are accessories. They have to be ordered. They can be built-in (as in drawing above) or installed remote.



Electrical supply (green): indicates that green switch has been turned in On position and the unit is electrically supplied with the following meanings:
led ON: unit running;
led slowly blinking: unit turned off from remote



Compressor led (green): indicates compressor status with the following meanings:
led ON: compressor running;
led blinking: compressor time delay to start;



Alarm led (red): indicates the unit alarm status according to the following meanings:
red led ON: high pressure alarm;
red led blinking: low pressure alarm;
red led and compressor led ON: compressor thermal overload alarm;
red led and defrost led blinking: maximum defrost cycle time overcome;
red led and defrost led alternatively blinking: operating threshold limit overcome probe failure;



Defrost led (yellow): indicates that the units is executing the defrost cycle;
led fastly blinking: execution of drop cycle at the defrost end.



Dehumidification led (green): indicates that the control is requiring dehumidification operating mode;



Cooling mode (green): indicates that the control is requiring cooling system operating mode.

UNIT SWITCH OFF

To stop the unit, turn to the OFF position the green switch. Its internal led will be turned off.



Warning: never switch off the unit (for temporary stop), opening the main switch: this component should be used only to disconnect the unit from power supply when the current is not passing through, i.e. when the unit is in OFF mode.

REFRIGERANT CHARGE CHECKING

- After few hours the unit is working, check that sight glass shows a green colour core: if the core is yellow moisture would be present in the circuit. In this case it is necessary circuit dehydration to be carried out by qualified people only. Check that at the sight glass there is no continuous vapour bubbles presence. In this case additional refrigerant charge could be required. It is however allowed the presence of few vapour bubbles.
- Few minutes after the start up, working on summer operating mode (cooling), check that condensing temperature, is approximately 15 °C higher than condenser inlet air temperature. Check moreover that evaporation temperature is about 5 °C lower than the evaporator outlet temperature.
- Check that refrigerant superheat on the evaporator is about 5-7 °C
- Check if refrigerant sub-cooling on the condenser is about 5-7 °C.

POWER SAVINGS

To reduce power consumption it is advisable to refer to the following notes :

- Be sure that room in which unit should operate, has doors and windows firmly closed;
- Set the humidity control switch to the proper value: lower set values than necessary (even few points) may cause great capacity loss with consequently longer operating periods: it is advisable to set humidity values below 60% only if strictly necessary.



Any routine or not-routine maintenance operation shall be carried out when the equipment has been shut down, disconnected from electric and pneumatic power source and after its pneumatic system has been discharged.

MAINTENANCE AND PERIODIC CHECKS

- It is a good rule to carry on periodic checks in order to verify the correct working of the unit:
- Check that safety and control devices are working correctly (monthly).
- Check all the terminals on the electric board and on the compressor are well locked. Periodic cleaning of the sliding terminals of the contactors should be done: if any damage is found, please replace the contactors (monthly).
- Check there is no oil leakage from compressor (monthly).
- Check compressor crankcase heater proper supply and functioning (monthly: low temperature units only).
- Clean draining pan and pipeline (monthly).
- Clean finned coils filters with compressed air in the opposite direction of the airflow. If filters should be fully clogged, clean them with a water jet (monthly or more frequently if the unit operates on a dusty environment).
- Check mounting of fan blades and their balancing (every 4 months).
- Check the unit is not too noisy every 4 months).

REFRIGERANT CIRCUIT REPAIR

In the case that refrigerant circuit should be discharged, all the refrigerant must be recovered with proper machines. The system must be charged with nitrogen, using a gas bottle with a pressure reducing valve, until 15 bar pressure is reached. Any eventual leakage must be searched with a bubble leak finder. In case bubbles appear discharge the circuit before welding with proper alloys.



WARNING: Never use oxygen instead of nitrogen: explosions may occur.

ENVIRONMENT PROTECTION

According to European norms dealing with the use of depleting stratospheric ozone substances, it is forbidden to release refrigerants fluids in the atmosphere. They must be redelivered to the seller or to proper gathering points at the end of their operating life. Refrigerant R407C is mentioned among controlled substances and for this reason it must be subjected to the mentioned norms. **A particular care is recommended during service operations in order to reduce as much as possible any refrigerant loss.**

UNIT OUT OF SERVICE

Once the unit is arrived at the end of its life and needs to be removed or replaced, the following operations are recommended:

- the unit refrigerant has to be recovered by trained people and sent to proper collecting centre;
- compressor lubricating oil has to be recovered and sent to proper collecting centre;

the frame and various components, if not usable any longer, have to be dismantled and divided according to their nature; particularly copper and aluminium, which are present in conspicuous quantity in the unit. These operations allow easy material recover and recycling process, reducing environmental impact.

UNIT UNDER ALARM

When red led is lighted up the unit is stopped and set under alarm condition.



WARNING: the reset of the operation mode can happen only after removing the cause of the alarm and resetting the unit through the main switch ON/OFF. In case the red alarm is blinking, please contact the Company.



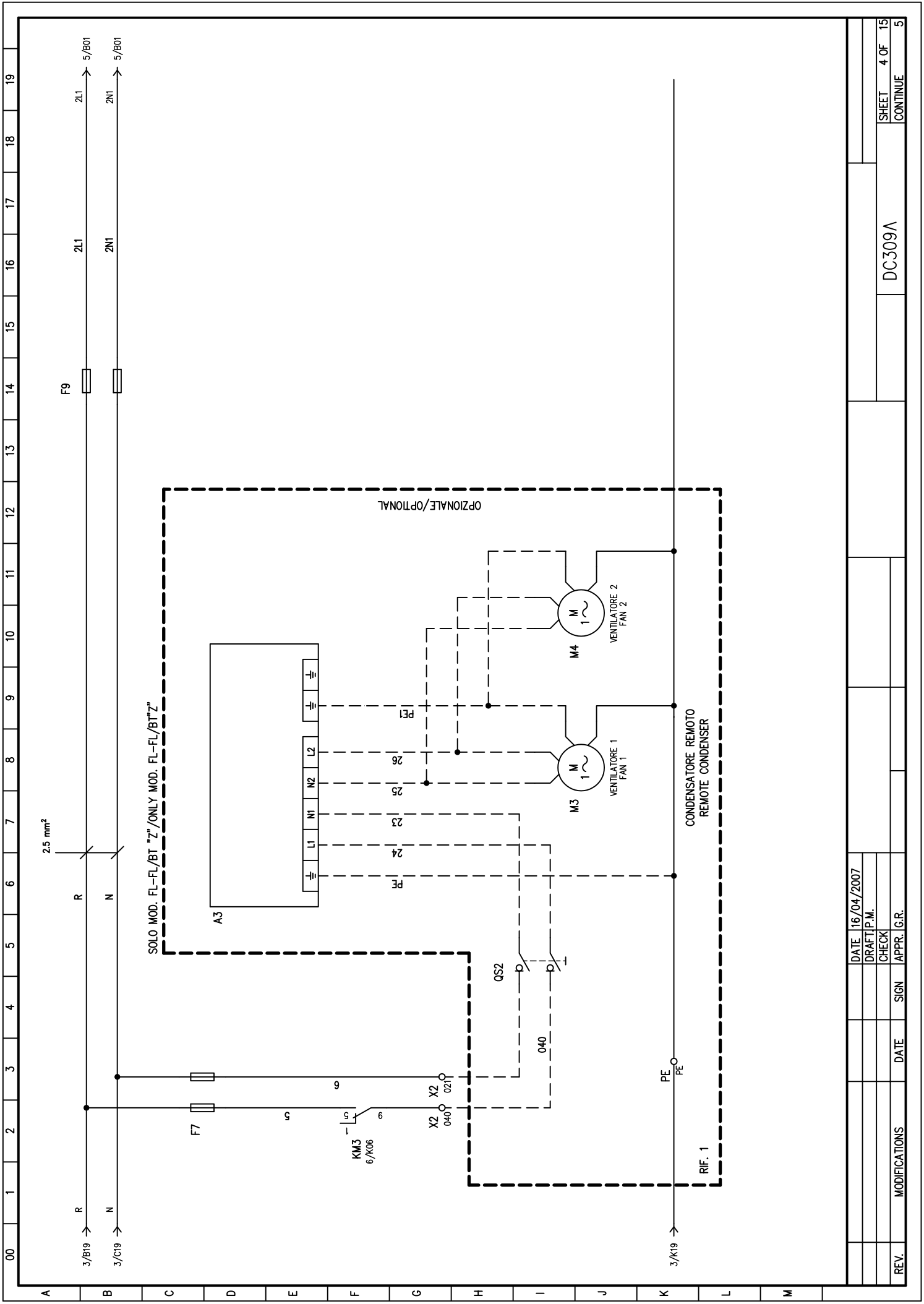
WARNING: Concerning the solutions, it is necessary to take an extreme care on the actions to adopt: an excessive confidence may cause serious accidents to inexperienced people. It is advisable, once the cause is detected, to contact our servicing people or trained people only.

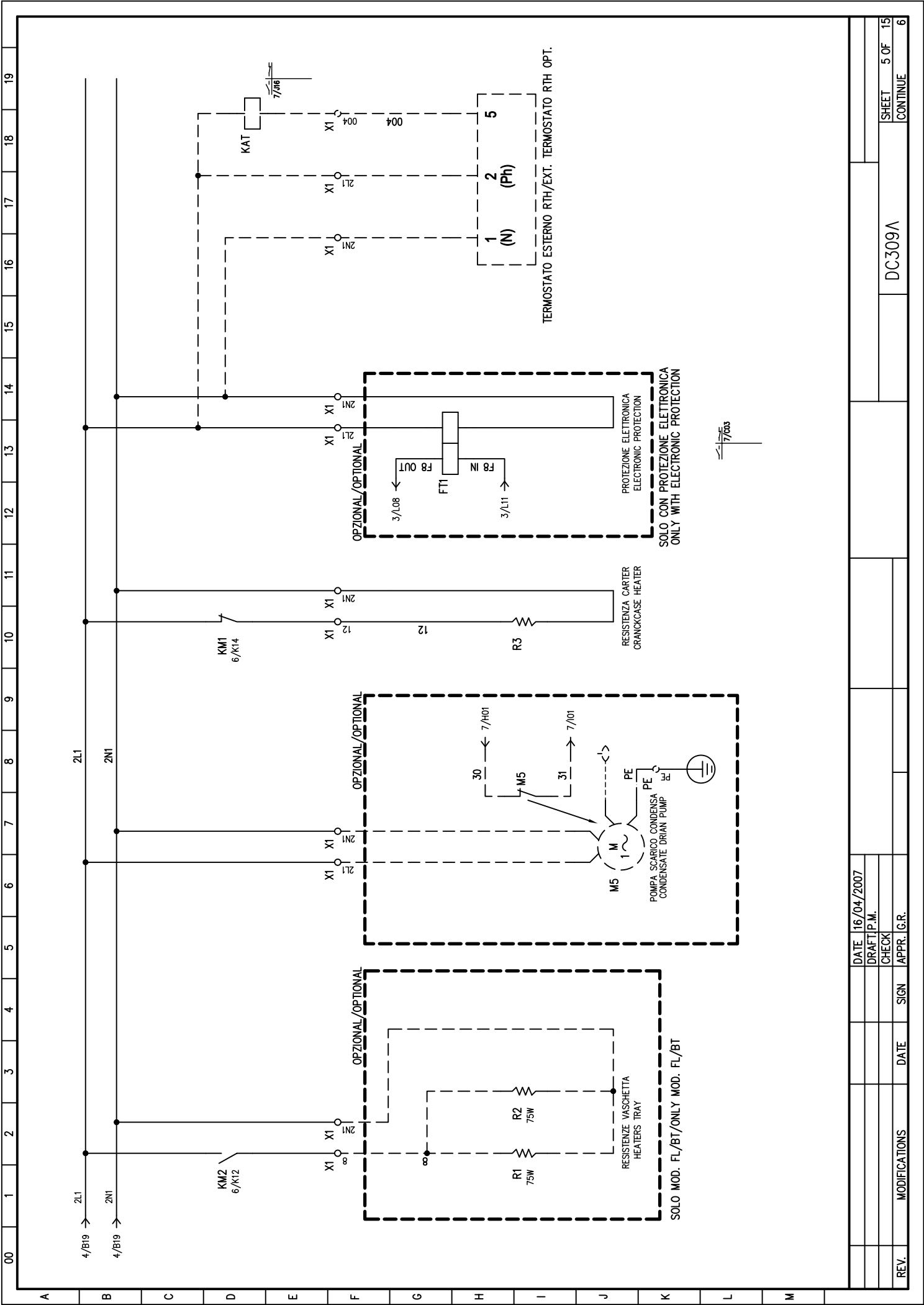
FAULT FINDING

In the following pages are reported the most common troubles that can cause the unit stop or an incorrect operation

PROBLEM	LED ON	PROBABLE CAUSE	CORRECTIVE ACTION
Unit does not start but alarm red led is off	None	Power supply missing fuses open	Provide power supply replace fuses
	Power supply led	Humidistat on set	Set a lower set point
	Power supply led, dehumidification led	Compressor thermal protection enabled, compressor defective	Let the compressor cool down, replace compressor defective
	Power supply led, defrost led		
Fan starts, compressor does not start, but red alarm led is off	None	Electronic board or led board defective	Replace defective board
	Power supply led, dehumidification led	Compressor thermal protection enabled, compressor defective	Let the compressor cool down, replace the compressor defective
Fan starts, compressor does not start but red alarm led is on	any	Electronic board or led board defective	Replace defective board
	Red alarm led	Air filters clogged	Clean filters and reset unit
		Low refrigerant charge	Charge the system
	Open panel, low air flow, suction side obstructed, high pressure switch on	Close the panel, clear suction side, reset high pressure switch	
any	Electronic board or led board defective	Replace defective board	
Fan starts, compressor does not start, but red alarm is blinking	Red alarm led	Defrost thermostat detective, low refrigerant charge	Replace thermostat, charge the system.
	any	Electronic board or led board defective	Replace defective board

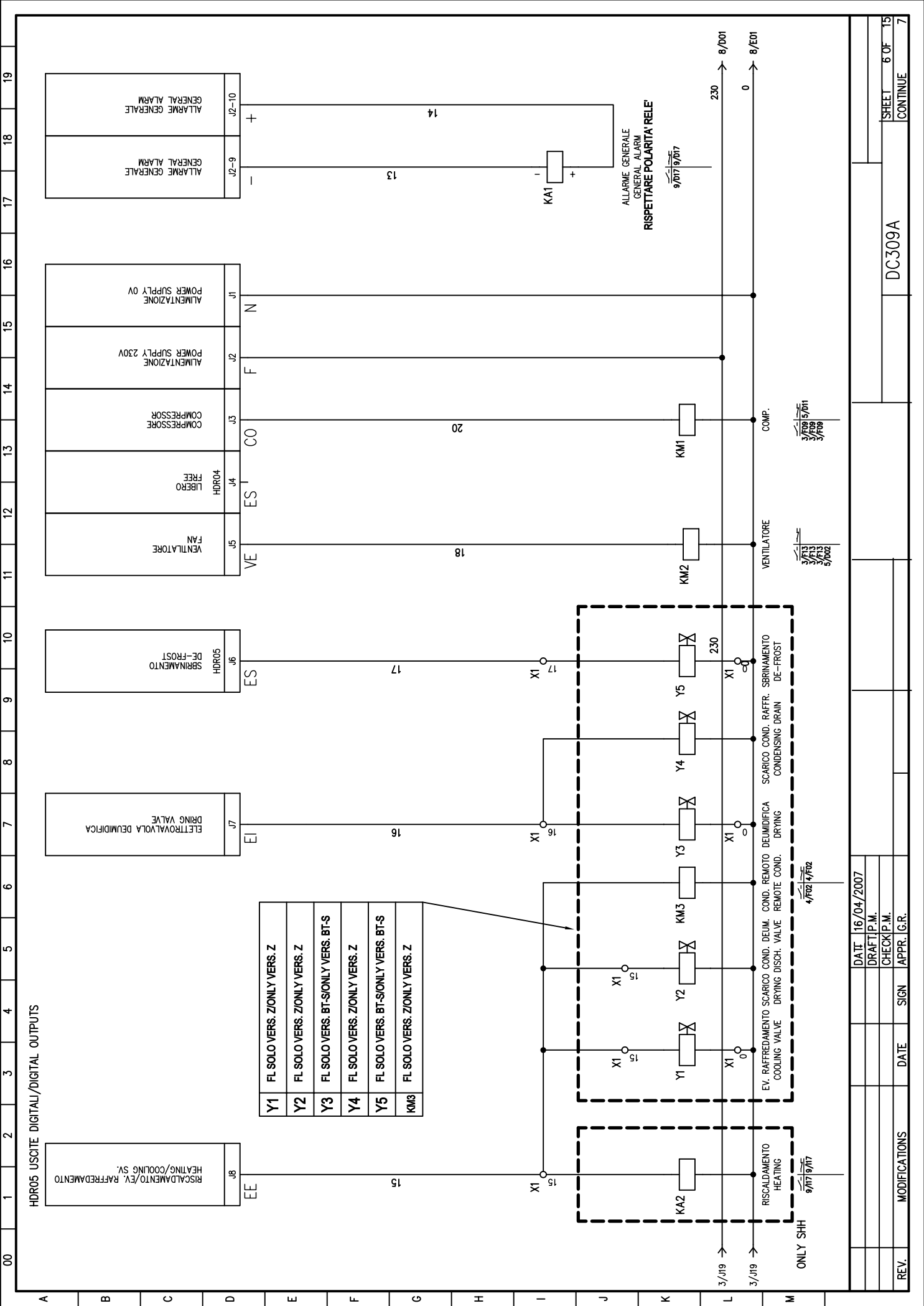
	00	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
A																				
B																				
C	Refrig. = R407C		FL STD. PREVALENZA / STD. PREVALENCE				FL ALTA PREVALENZA / HIGH PREVALENCE				Refrig. = R407C									
D	MODELLO MODEL MODELE'	MODELLO MODEL MODELE'	I_{MAX} (A)	P_{MAX} (kW)	I_{LR} (A)	I_{MAX} (A)	P_{MAX} (kW)	I_{LR} (A)												
E			18,8	9,6	100	19,6	10	100												
F			23	12,1	128	23,7	12,5	128												
			28,4	16,6	168	29,8	17,3	168												
G	Refrig. = R407C		FL BT				SHH				Refrig. = R407C									
H	MODELLO MODEL MODELE'	MODELLO MODEL MODELE'	I_{MAX} (A)	P_{MAX} (kW)	I_{LR} (A)	I_{MAX} (A)	P_{MAX} (kW)	I_{LR} (A)												
I			18,8	9,6	100	19,6	10	103												
J			23	12,1	128	23,7	12,5	132												
			28,4	16,6	168	29,8	17,3	173												
K																				
L	ALIM. ELETTRICA ELECTRICAL SUPPLY ALIM. ELECTRIQUE ELEKTROANSCHLUSS				ALIM. ELETTRICA ELECTRICAL SUPPLY ALIM. ELECTRIQUE ELEKTROANSCHLUSS				FASI PHASES PHASEN				Ph				FREQENZA FREQUENCY FREQUENCE FREQUENZ			
	AC 400V ± 10%				AC 400V ± 10%				3+N/PE				50Hz ± 1%							
M																				
	REV.		MODIFICATIONS		DATE		SIGN		APPR.		I.G.R.		DATE		16/04/2007		DRAFT/P.M.		CHECK/P.M.	
									FL-FL BT-S										DC309A	
																			SHEET 1 OF 15 CONTINUE 2	





REV.	MODIFICATIONS	DATE	SIGN	APPR.	G.R.

DATE 16/04/2007
DRAFT P.M.
CHECK
APPR.



HDR05 USCITE DIGITALI/DIGITAL OUTPUTS

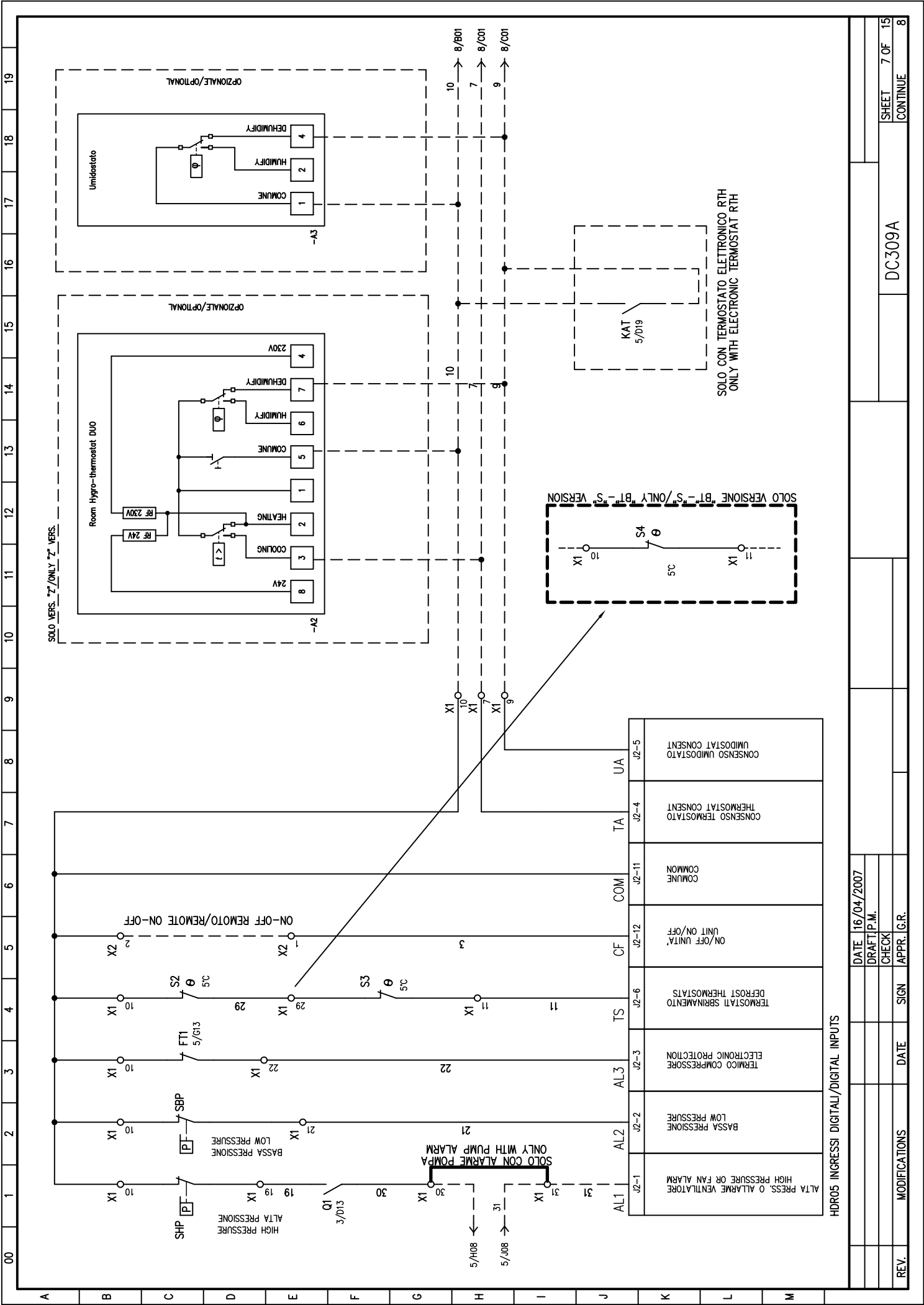
J8	RISCALDAMENTO/EV. RAFFREDDAMENTO HEATING/COOLING SV.
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Y1	FL SOLO VERS. ZIONLY VERS. Z
Y2	FL SOLO VERS. ZIONLY VERS. Z
Y3	FL SOLO VERS. BT-SIONLY VERS. BT-S
Y4	FL SOLO VERS. ZIONLY VERS. Z
Y5	FL SOLO VERS. BT-SIONLY VERS. BT-S
KM3	FL SOLO VERS. ZIONLY VERS. Z

J6	HDR05 SRRINAMENTO DF-FROST
----	----------------------------------

J5	VENTILATORE FAN
J4	HDR04 LIBERO FREE
J3	COMPRESSORE COMPRESSOR
J2	ALIMENTAZIONE 230V POWER SUPPLY 230V
J1	ALIMENTAZIONE 0V POWER SUPPLY 0V

J2-9	ALLARME GENERALE GENERAL ALARM
J2-10	ALLARME GENERALE GENERAL ALARM

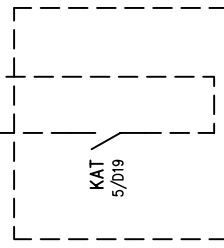
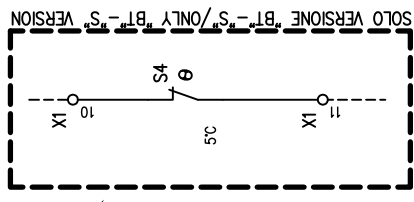


00 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19

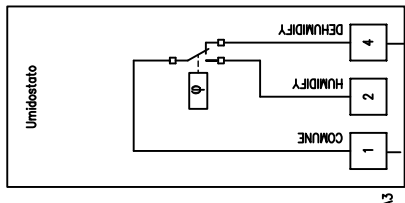
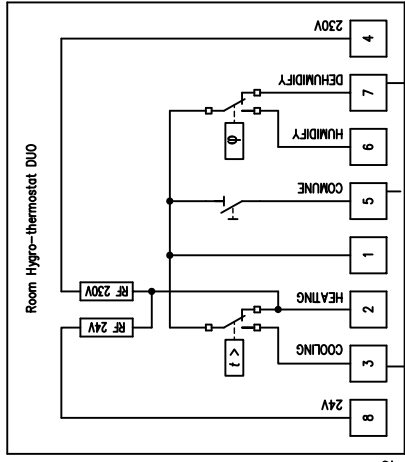
A B C D E F G H I J K L M

HDRO5 INGRESSI DIGITALI/DIGITAL INPUTS

AL1	J2-1	ALTA PRESS. O ALARME VENTILATORE
AL2	J2-2	BASSA PRESSURE
AL3	J2-3	ELETTRICO COMPRESSORE
TS	J2-6	TERMOSTATI SERBAMENTO
CF	J2-12	ON/OFF UNITA'
COM	J2-11	COMMON
TA	J2-4	CONSENSO TERMOSTATO
UA	J2-5	CONSENSO UMIDOSTATO



SOLE CON TERMOSTATO ELETTRONICO RTH
ONLY WITH ELECTRONIC THERMOSTAT RTH



SOLE VERS. "Z"/ONLY "Z" VERS.

OPZIONALE/OPTIONAL

OPZIONALE/OPTIONAL

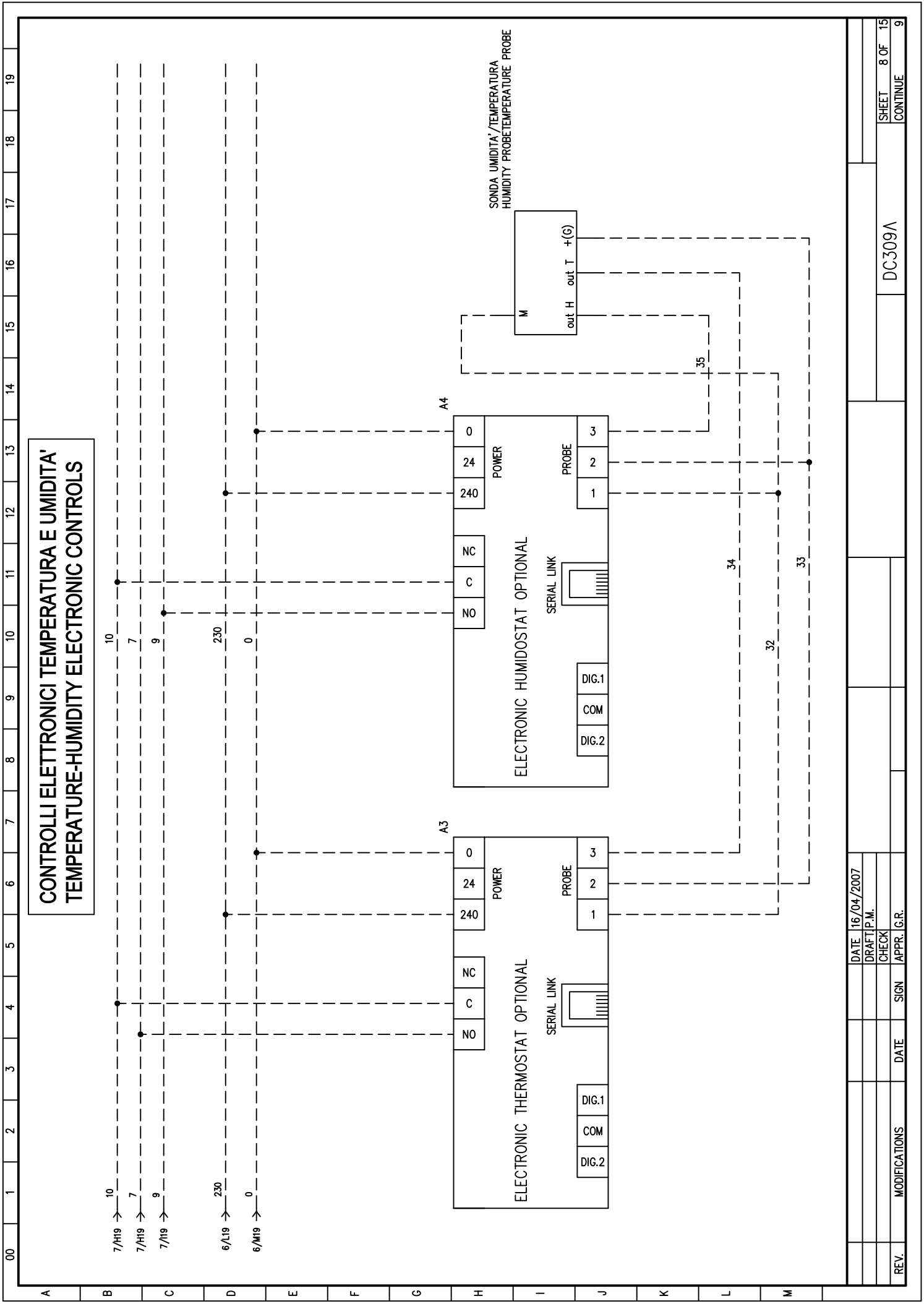
SOLE CON ALARME POMPA
ONLY WITH PUMP ALARM

ON-OFF REMOTO/REMOTE ON-OFF

DATE 16/04/2007
DRAFT P.M.
CHECK APPR. G.R.

MODIFICATIONS DATE SIGN

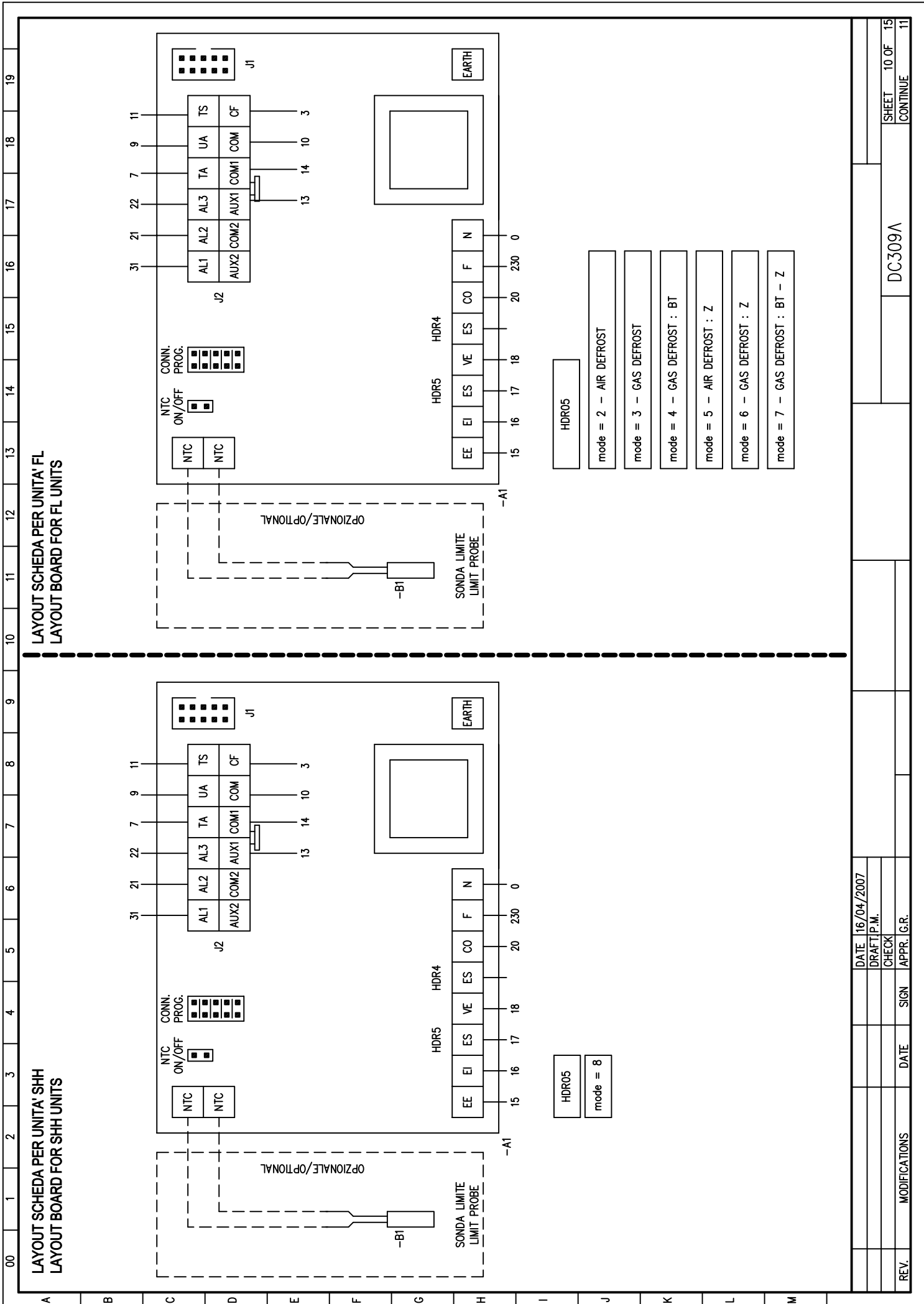
REV.



**CONTROLLI ELETTRONICI TEMPERATURA E UMIDITA'
TEMPERATURE-HUMIDITY ELECTRONIC CONTROLS**

REV.	MODIFICATIONS	DATE	SIGN	APPR.	G.R.

DATE	16/04/2007
DRAFT P.M.	
CHECK	
APPR.	
G.R.	



HDR05

- mode = 2 - AIR DEFROST
- mode = 3 - GAS DEFROST
- mode = 4 - GAS DEFROST : BT
- mode = 5 - AIR DEFROST : Z
- mode = 6 - GAS DEFROST : Z
- mode = 7 - GAS DEFROST : BT - Z

HDR05

mode = 8

LAYOUT SCHEDA PER UNITA' FL
LAYOUT BOARD FOR FL UNITS

LAYOUT SCHEDA PER UNITA' SHH
LAYOUT BOARD FOR SHH UNITS

REV.	MODIFICATIONS	DATE	SIGN	APPR.	G.R.
		DATE 16/04/2007			
		DRAFT I.P.M.			
		CHECK			
		DC309A			
		SHEET 10 OF 15			
		CONTINUE			

00	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
A	SIGLA INITIALS SIGLE KENNZEICH	POSIZIONE POSITION POSITION ORTEN	-- Denominazione --													-- Denomination --		-- Bezeichnung --	
B	-A1	CONTROLLO ELETTRONICO														ELECTRONIC CONTROL			
	-A2	TERMO-IGROSTATO														HYGRO-THERMOSTAT			
	-A3	REGOLATORE DI VELOCITA'														SPEED REGULATOR			
	B1	SONDA LIMITE														LIMIT PROBE			
C	F1	FUSIBILI COMPRESSORE														COMPRESSOR FUSES			
	F2	FUSIBILI RELE' SEQUENZA FASI														PHASE SEQUENCE RELAY FUSES			
	F7	FUSIBILI CONDENSATORE REMOTO														REMOTE CONDENSER FUSES			
	F9	PROTEZIONE ELETTRONICA														ELECTRONIC PROTECTION			
D	F3	FUSIBILI TRASFORMATORE														TRANSFORMER FUSES			
	F10	FUSIBILE AUSILIARI														AUXILIARY FUSE			
	KM1	CONTATTORE COMPRESSORE														COMPRESSOR CONTACTOR			
	RSF	RELE' SEQUENZA FASI														SEQUENCE RELAY FUSES			
E	KM2	CONTATTORE VENTILATORE														FAN CONTACTOR			
	KM3	RELE' CONDENSATORE REMOTO														REMOTE CONDENSER RELAY			
	KA1	RELE' ALLARME GENERALE														GENERAL ALARM RELAY			
	-M1	COMPRESSORE														COMPRESSOR			
	-M2	VENTILATORE														FAN			
	-M3	VENTILATORE														FAN			
	-M4	VENTILATORE														FAN			
	-M5	POMPA														PUMP			
G	QS	SEZIONATORE														ISOLATOR			
	Q1	INTERRUTTORE AUTOMATICO VENTILATORE														FAN AUTOMATIC SWITCH			
	QS	SEZIONATORE														ISOLATOR			
	Q3	INTERRUTTORE ON - OFF														ON - OFF SWITCH			
H	R3	RESISTENZA CARTER														CARTER HEATER			
	R1	RESISTENZA														HEATER			
	R2	RESISTENZA														HEATER			
	SHP	PRESSOSTATO ALTA PRESSIONE														HIGH PRESSURE SWITCH			
I	SLP	PRESSOSTATO BASSA PRESSIONE														LOW PRESSURE SWITCH			
	S2	TERMOSTATO SBRINAMENTO														DEFROST THERMOSTAT			
	S3	TERMOSTATO SBRINAMENTO														DEFROST THERMOSTAT			
	TR	TRASFORMATORE														TRANSFORMER			
J	-X1	MORSETTIERA														TERMINAL STRIP			
	-X2	MORSETTIERA														TERMINAL STRIP			
	Y5	ELETTROVALVOLA SBRINAMENTO														DEFROST VALVE			
	Y3	ELETTROVALVOLA DEUMIDIFICA														DRYING VALVE			
K	Y4	ELETTROVALVOLA SCARICO CONDENSA														COND. DISCHARGE VALVE			
	Y1	ELETTROVALVOLA RAFFREDDAMENTO														COOLING VALVE			
	Y2	ELETTROVALVOLA SCARICO DEUMIDIFICA														DRYING DISCHARGE VALVE			
L																			
M																			

REV.	MODIFICATIONS	DATE	SIGN	APPR.	G.R.
		DATE 16/04/2007			
		DRAFT P.M.			
		CHECK			

DC309A

HIDROS

UMIDIFICAZIONE
UMIDIFICAZIONE

Hidros S.r.l.
Via Dell'industria, 5
35020 BRUGINE (PD) - Italy
Tel. +39 049 9731022
Fax +39 049 5806928
e-mail: info@hidros.it
web: www.hidros.it

Refrig. = R407C	SHH		
	I _{MAX} (A)	P _{MAX} (kW)	I _{LR} (A)
MODELLO MODEL MODELE' _			
330	17,2	6,5	73
400	19	7,4	81

Refrig. = R407C	ITM STD. PREVALENZA / STD. PREVALENCE		
	I _{MAX} (A)	P _{MAX} (kW)	I _{LR} (A)
MODELLO MODEL MODELE' _			
330	18,9	6,7	67
400	20,6	7,6	75

Refrig. = R407C	ITM / BT		
	I _{MAX} (A)	P _{MAX} (kW)	I _{LR} (A)
MODELLO MODEL MODELE' _			
330	22,4	7,4	67
400	24,1	8,3	75

ALIM. ELETTRICA ELECTRICAL SUPPLY ALIM. ELECTRIQUE ELEKTROANSCHLUSS	ALIM. ELETTRICA ELECTRICAL SUPPLY ALIM. ELECTRIQUE ELEKTROANSCHLUSS	V	FASI PHASES PHASEN	Ph	FREQUENZA FREQUENCY FREQUENCE

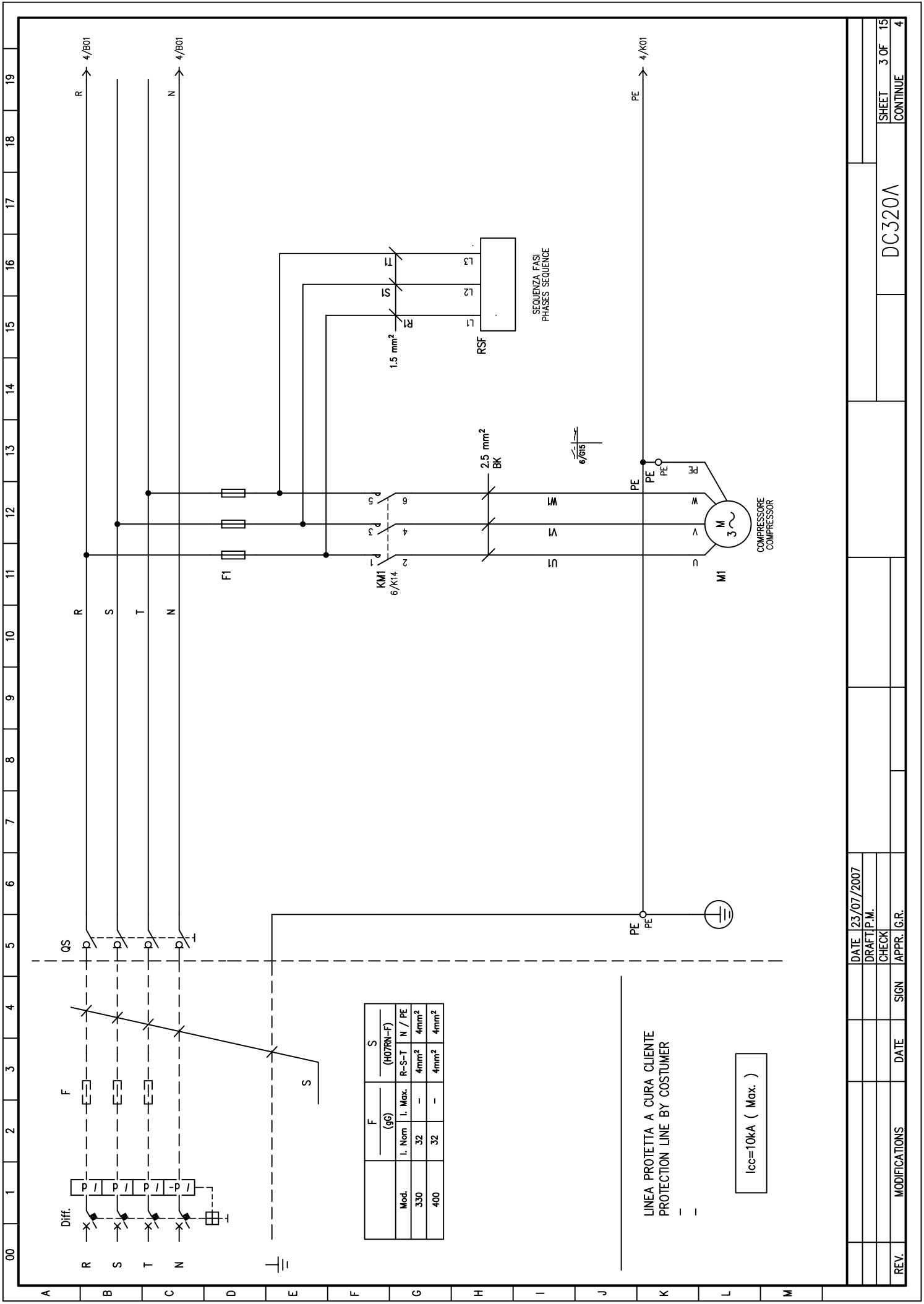
REV.	MODIFICATIONS	DATE	SIGN	APPR. G.R.	DATE	123/07/2007
						DRAFT P.M.
						CHECK P.M.
				ITM-ITM/BT-S	DC320A	
						SHEET 1 OF 15
						CONTINUE 2

MOD.	330			400		
	I _M (A)	P _M (kW)	I _{LR} (A)	I _M (A)	P _M (kW)	I _{LR} (A)
-M1	9,8	5,8	66	11,5	6,7	74
-M2	6,8	0,5	-	6,8	0,5	-
-M3	0,73	0,16	-	0,73	0,16	-
-M4	0,73	0,16	-	0,73	0,16	-
-M5	0,8	0,09	-	0,8	0,09	-

MOD.	330			400		
	I _M (A)	P _M (kW)	I _{LR} (A)	I _M (A)	P _M (kW)	I _{LR} (A)
-M1	9,8	5,8	66	11,5	6,7	74
-M2	6,6	0,6	-	6,6	0,6	-
-M3	0,8	0,09	-	0,8	0,09	-

MOD,	330 / BT			400 / BT		
	I _M (A)	P _M (kW)	I _{LR} (A)	I _M (A)	P _M (kW)	I _{LR} (A)
-M1	9,8	5,8	66	11,5	6,7	74
-M2	6,8	0,5	-	6,8	0,5	-
-M3	2,5	0,5	4,75	2,5	0,5	4,75
-M4	2,5	0,5	4,75	2,5	0,5	4,75
-M5	0,8	0,09	-	0,8	0,09	-

REV.	MODIFICATIONS	DATE	SIGN
		DATE 23/07/2007	
		DRAFT P.M.	
		CHECK P.M.	
		APPR. G.R.	
DC320A			
			SHEET 2 OF 15
			CONTINUE



DATE 23/07/2007

DRAFT P.M.

CHECK

APPR. G.R.

SIGN

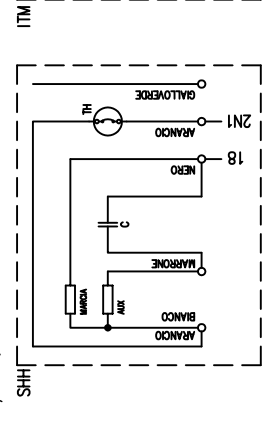
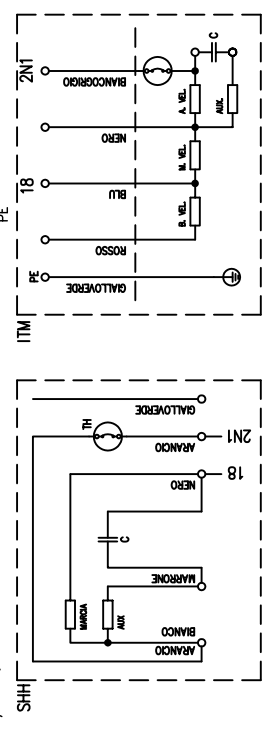
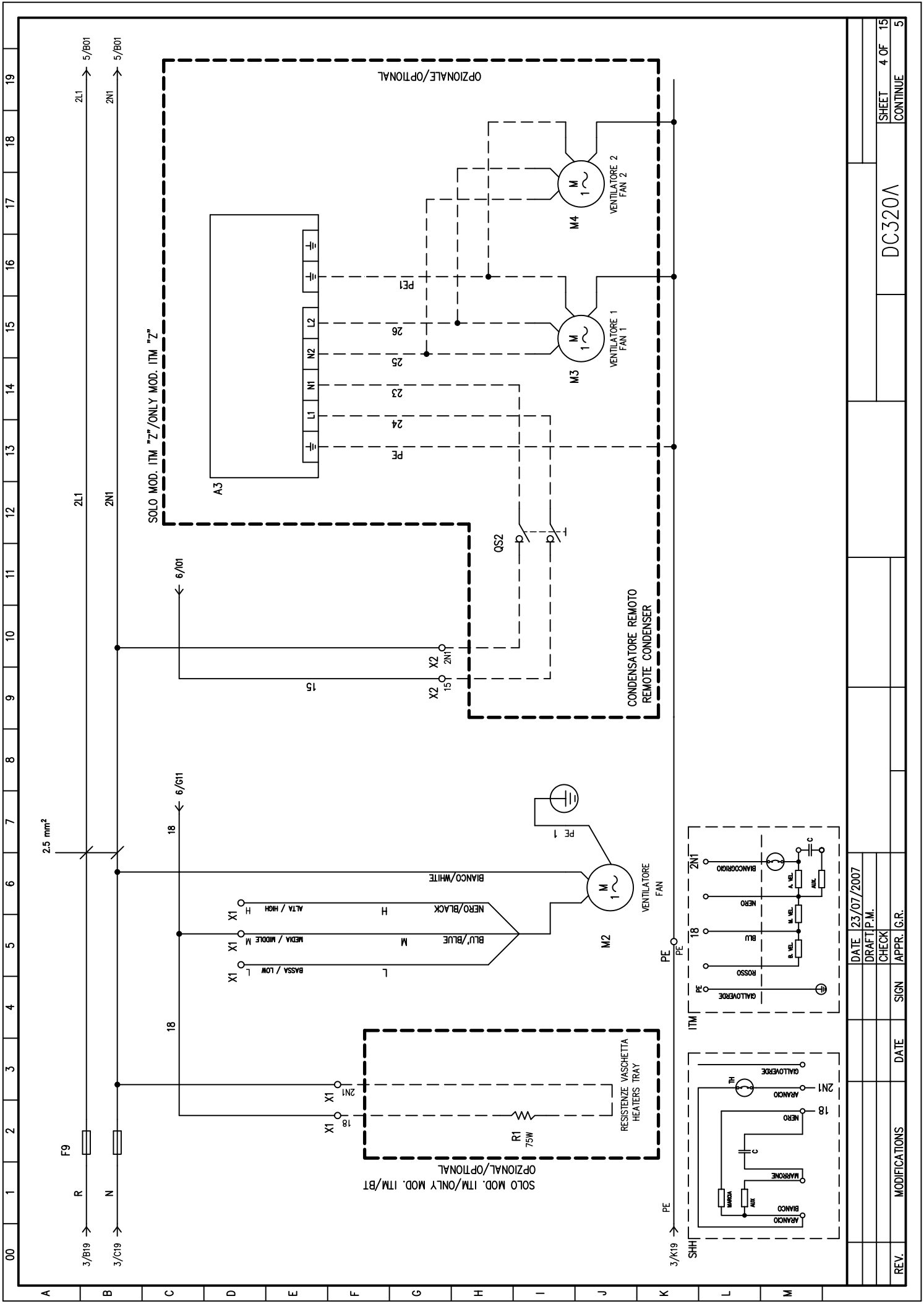
DATE

MODIFICATIONS

DC320A

SHEET 3 OF 15

CONTINUE 4



OPZIONALE/OPTIONAL

SOLO MOD. ITM "Z"/ ONLY MOD. ITM "Z"

CONDENSATORE REMOTO
REMOTE CONDENSER

VENTILATORE FAN
M2

RESISTENZE VASCHETTA
HEATERS TRAY

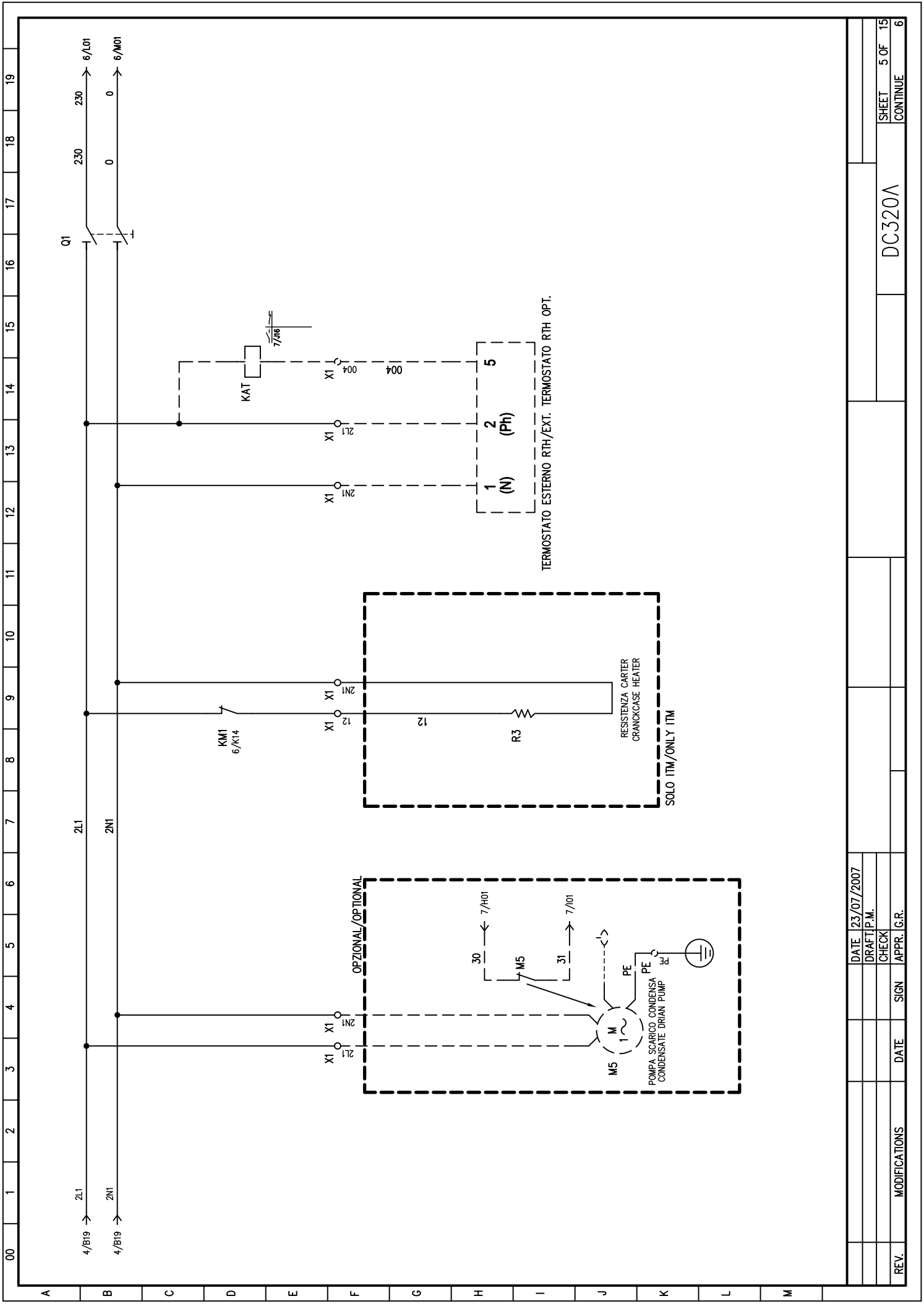
OPZIONALE/OPTIONAL

DATE	23/07/2007
DRAFT I.P.M.	
CHECK	
APPR.	
G.R.	

MODIFICATIONS	DATE	SIGN	

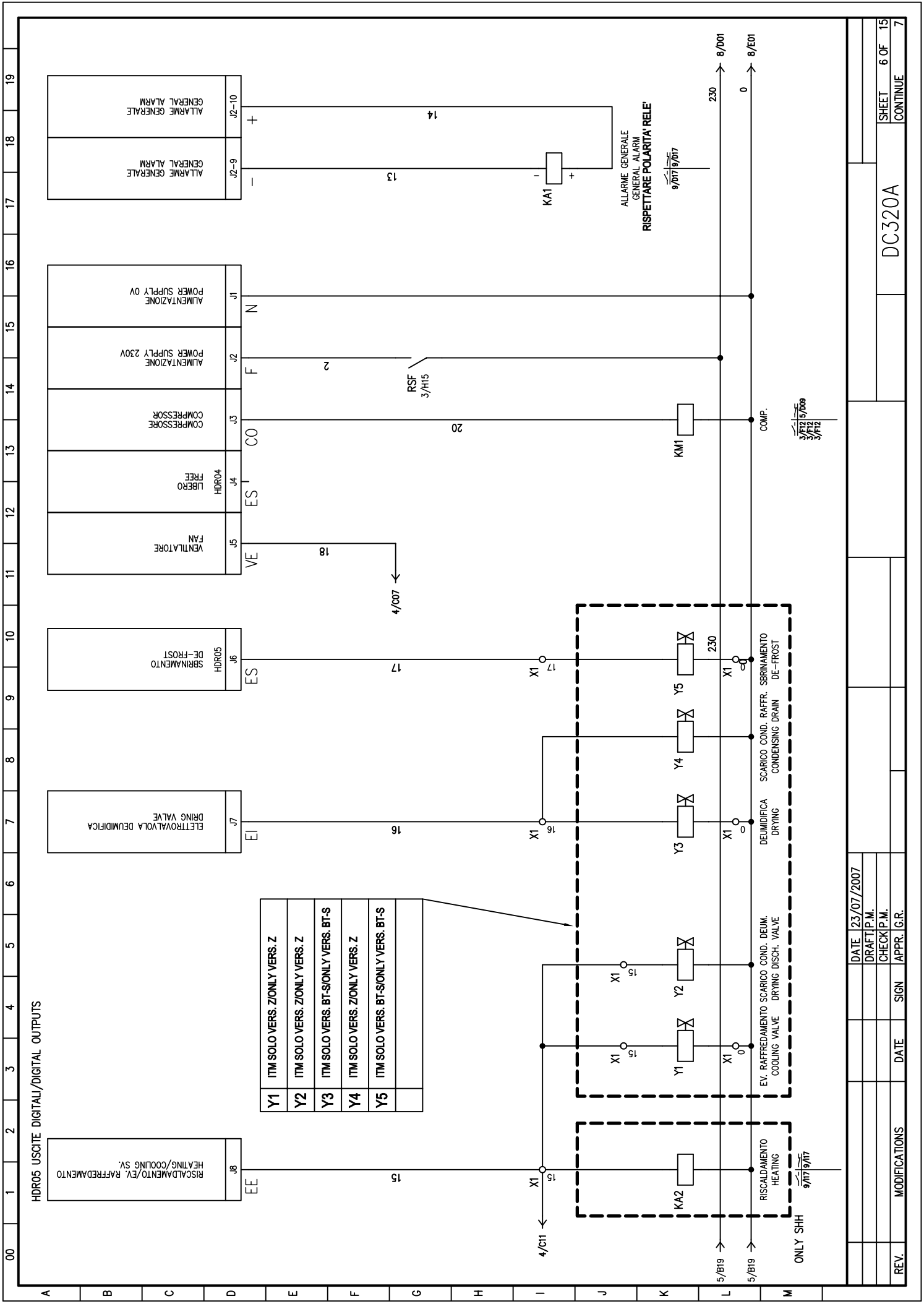
REV.			

DC320A



DATE	23/07/2007
DRAFT/P.M.	
CHECK	
APPR.	G.R.

REV.	MODIFICATIONS	DATE	SIGN	APPR.	G.R.



00 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19

A B C D E F G H I J K L M

VE ES ES EI EE

J5 J4 J3 J2 J1

J6

J2-9 J2-10

Y1	ITM SOLO VERS. Z ONLY VERS. Z
Y2	ITM SOLO VERS. Z ONLY VERS. Z
Y3	ITM SOLO VERS. BT-S ONLY VERS. BT-S
Y4	ITM SOLO VERS. Z ONLY VERS. Z
Y5	ITM SOLO VERS. BT-S ONLY VERS. BT-S

HDR05 USCITE DIGITALI/DIGITAL OUTPUTS

RISCALDAMENTO/EV. RAFFREDDAMENTO HEATING/COOLING SV

ELETTROVALVOLA DEUMIDIFICA DRAIN VALVE

SBRINAMENTO DE-FROST

VENTILATORE FAN

LIBERO FREE

COMPRESSOR

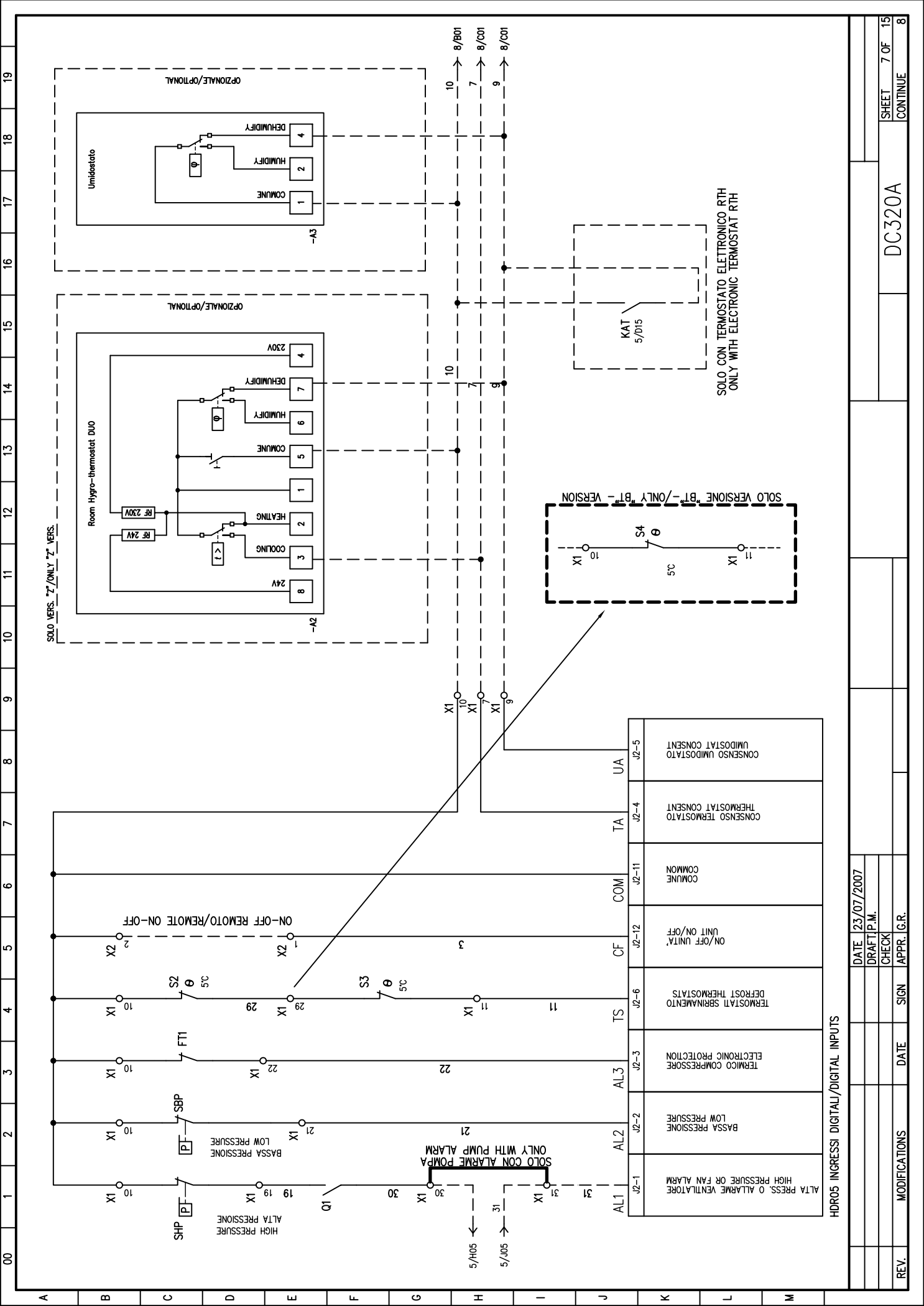
ALIMENTAZIONE 230V POWER SUPPLY 230V

ALIMENTAZIONE 0V POWER SUPPLY 0V

ALLARME GENERALE GENERAL ALARM

ALLARME GENERALE GENERAL ALARM

REV.	MODIFICATIONS	DATE	SIGN	APPR.	G.R.
		DATE 23/07/2007			
		DRAFT P.M.			
		CHECK P.M.			

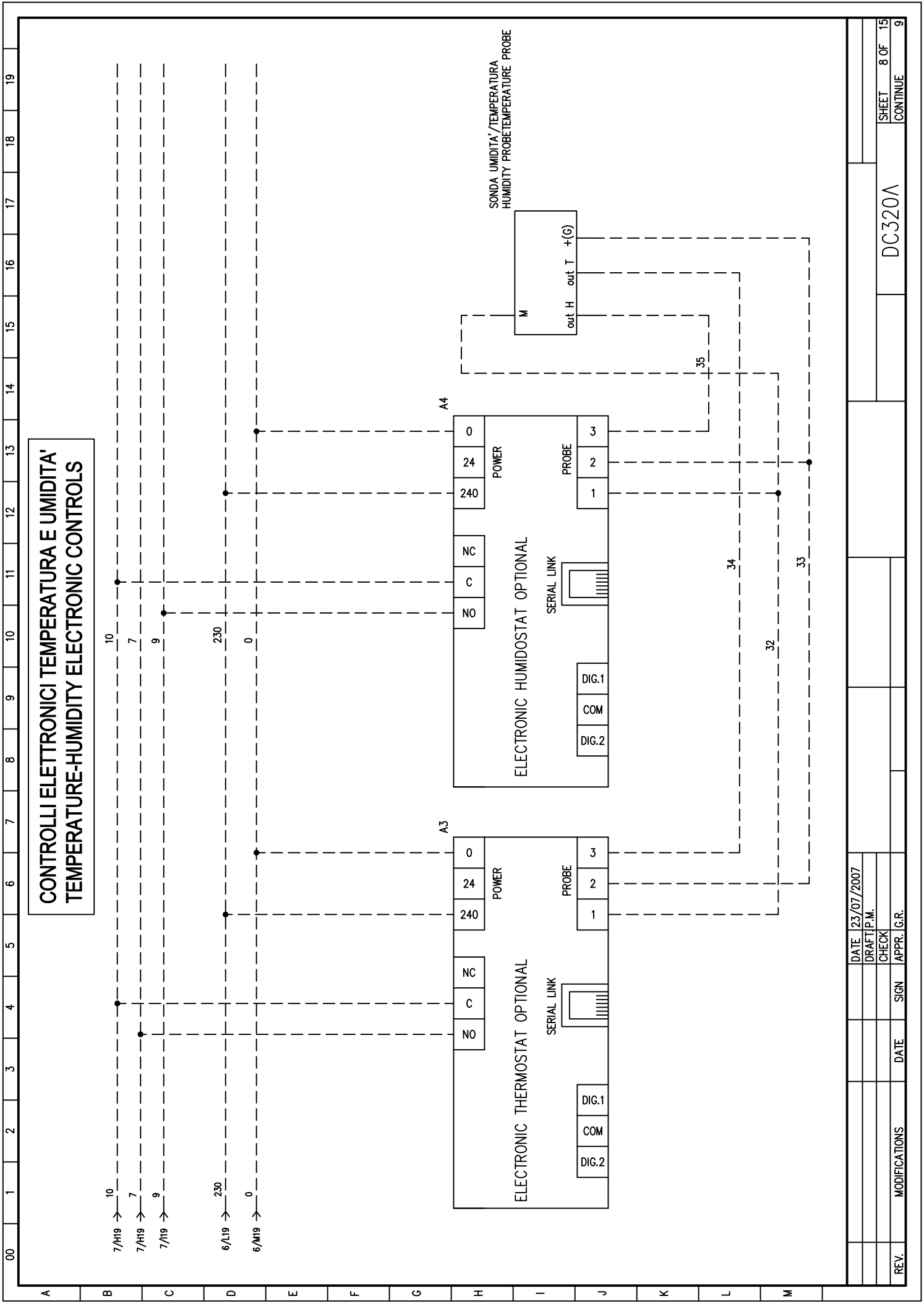


HDRO5 INGRESSI DIGITALI/DIGITAL INPUTS

REV.	MODIFICATIONS	DATE	SIGN	APPR.	G.R.
		DATE 123/07/2007			
		DRAFT P.M.			
		CHECK			
		APPR.			

DC320A

SHEET 7 OF 15
CONTINUE 8



CONTROLLI ELETTRONICI TEMPERATURA E UMIDITA'
TEMPERATURE-HUMIDITY ELECTRONIC CONTROLS

00	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
A																				
B	10	7	9																	
C																				
D	10	7	9																	
E																				
F																				
G																				
H																				
I																				
J																				
K																				
L																				
M																				

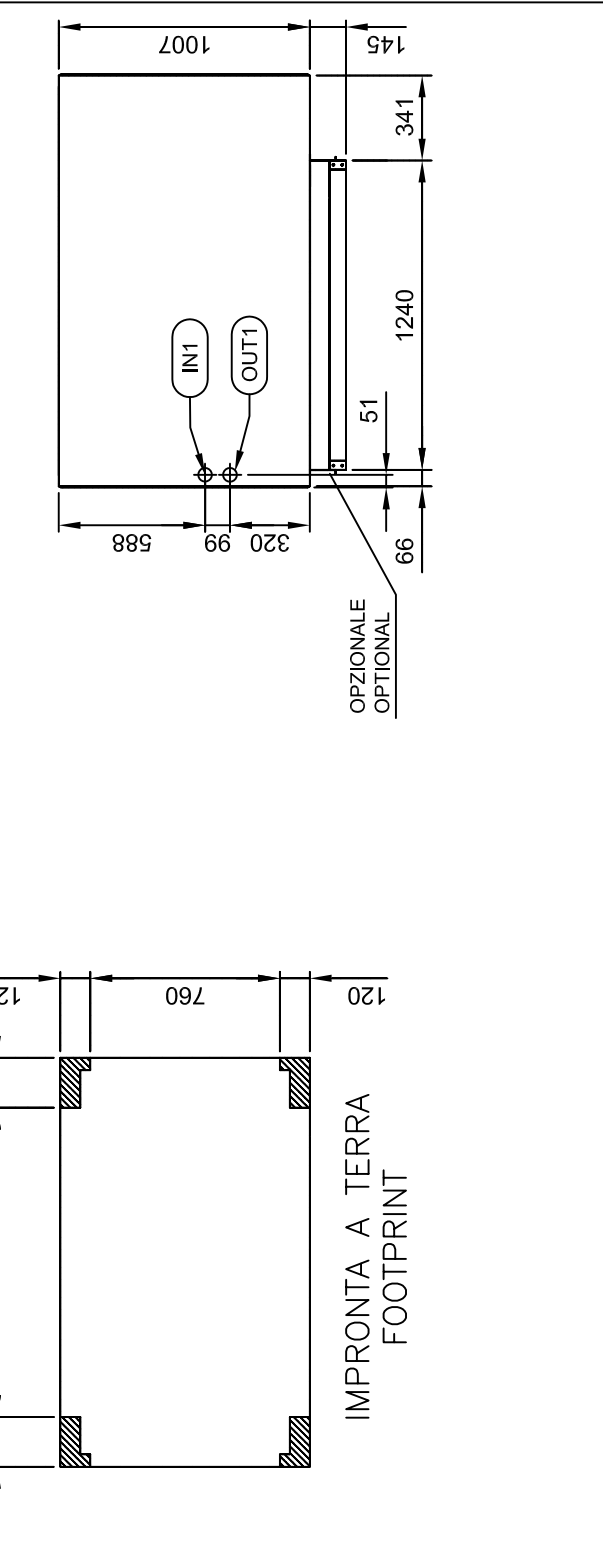
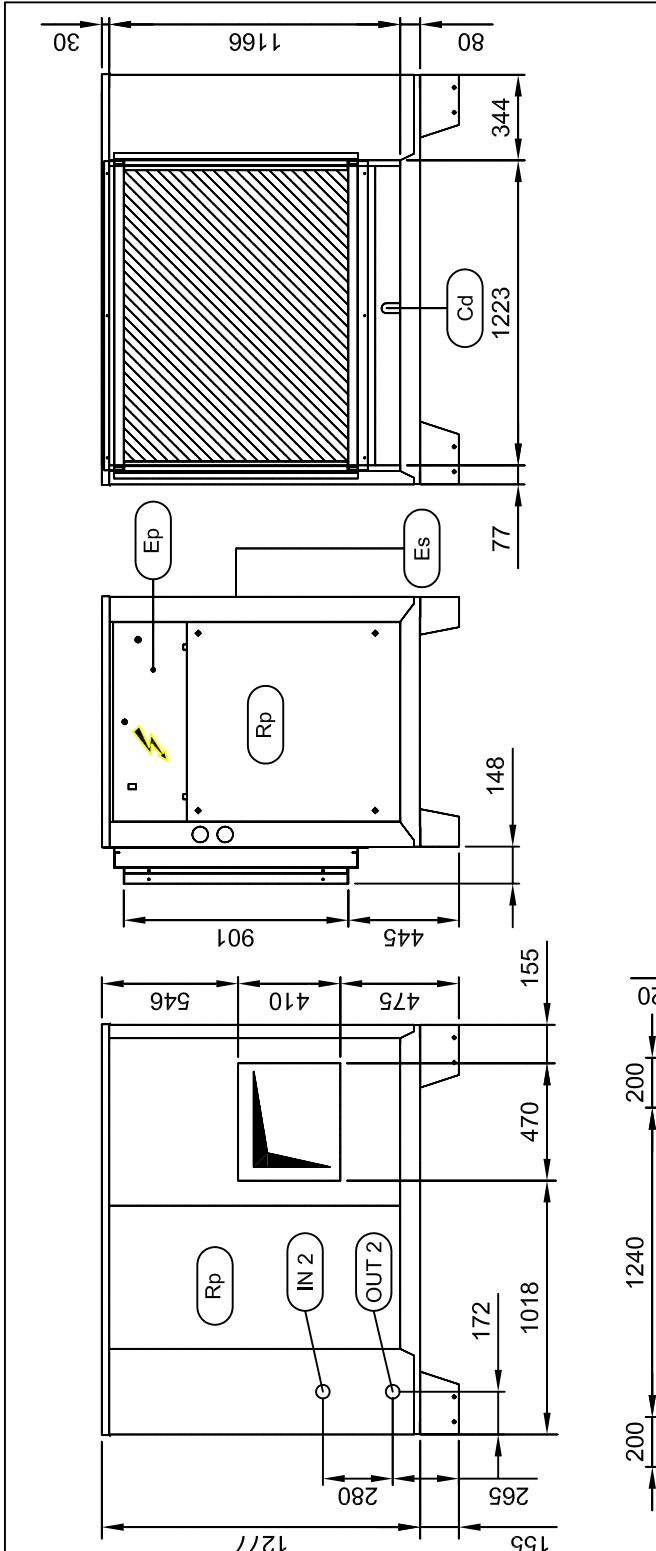
REV.	MODIFICATIONS		DATE	SIGN	APPR.	G.R.
				DATE 23/07/2007		
				DRAFT P.M.		
				CHECK		
				APPR.		
				SIGN		
				DATE		
						DC320A
						SHEET 8 OF 15
						CONTINUE 9

00	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
A	SIGLA INITIALS SIGLE KENNZEICH	POSIZIONE POSITION POSITION ORTEN	-- Denominazione --													-- Denomination --		-- Bezeichnung --	
B	-A1	CONTROLLO ELETTRONICO	ELECTRONIC CONTROL																
	-A2	TERMO-IGROSTATO	HYGRO-THERMOSTAT																
	-A3	REGOLATORE DI VELOCITA'	SPEED REGULATOR																
	B1	SONDA LIMITE	LIMIT PROBE																
C	F1	FUSIBILI COMPRESSORE	COMPRESSOR FUSES																
	F2	FUSIBILI RELE' SEQUENZA FASI	PHASE SEQUENCE RELAY FUSES																
	F7	FUSIBILI CONDENSATORE REMOTO	REMOTE CONDENSER FUSES																
	F9	PROTEZIONE ELETTRONICA	ELECTRONIC PROTECTION																
D	F3	FUSIBILI TRASFORMATORE	TRANSFORMER FUSES																
	F10	FUSIBILE AUSILIARI	AUXILIARY FUSE																
	KM1	CONTATTORE COMPRESSORE	COMPRESSOR CONTACTOR																
	RSF	RELE' SEQUENZA FASI	SEQUENCE RELAY FUSES																
E	KM2	CONTATTORE VENTILATORE	FAN CONTACTOR																
	KM3	RELE' CONDENSATORE REMOTO	REMOTE CONDENSER RELAY																
	KA1	RELE' ALLARME GENERALE	GENERAL ALARM RELAY																
	-M1	COMPRESSORE	COMPRESSOR																
	-M2	VENTILATORE	FAN																
	-M3	VENTILATORE	FAN																
	-M4	VENTILATORE	FAN																
	-M5	POMPA	PUMP																
G	QS	SEZIONATORE	ISOLATOR																
	Q1	INTERRUTTORE AUTOMATICO VENTILATORE	FAN AUTOMATIC SWITCH																
	QS	SEZIONATORE	ISOLATOR																
	Q3	INTERRUTTORE ON - OFF	ON - OFF SWITCH																
H	R3	RESISTENZA CARTER	CARTER HEATER																
	R1	RESISTENZA	HEATER																
	R2	RESISTENZA	HEATER																
	SHP	PRESSOSTATO ALTA PRESSIONE	HIGH PRESSURE SWITCH																
I	SLP	PRESSOSTATO BASSA PRESSIONE	LOW PRESSURE SWITCH																
	S2	TERMOSTATO SBRINAMENTO	DEFROST THERMOSTAT																
	S3	TERMOSTATO SBRINAMENTO	DEFROST THERMOSTAT																
	TR	TRASFORMATORE	TRANSFORMER																
J	-X1	MORSETTIERA	TERMINAL STRIP																
	-X2	MORSETTIERA	TERMINAL STRIP																
	Y5	ELETTROVALVOLA SBRINAMENTO	DEFROST VALVE																
	Y3	ELETTROVALVOLA DEUMIDIFICA	DRYING VALVE																
K	Y4	ELETTROVALVOLA SCARICO CONDENSA	COND. DISCHARGE VALVE																
	Y1	ELETTROVALVOLA RAFFREDDAMENTO	COOLING VALVE																
	Y2	ELETTROVALVOLA SCARICO DEUMIDIFICA	DRYING DISCHARGE VALVE																
L																			
M																			

REV.	MODIFICATIONS	DATE	SIGN	APPR.	G.R.
		DATE	SIGN	APPR.	G.R.
		DATE	SIGN	APPR.	G.R.

DC320A

REV.					
□					
○					
□					



Rp	PANNELLI DI ISPEZIONABILI INSPECTION PANEL
Es	INGRESSO ALIMENTAZIONE ELETTRICA POWER SUPPLY INLET
Ep	QUADRO ELTRICO ELECTRICAL BOX
Sc	SCARICO CONDENSA CONDENSATE DRAIN
IN1	INGRESSO BATTERIA ACQUA CALDA INLET HOT WATER COIL 1" M
OUT1	USCITA BATTERIA ACQUA CALDA OUTLET HOT WATER COIL 1" M
IN2	INGRESSO ACQUA DESURRISCALDATORE WATER INLET DESUPERHATER 3/4" M
OUT2	USCITA ACQUA DESURRISCALDATORE OUTLRT WATER DESUPERHATER 3/4" M

Denominazione/Denomination SCHEMA DIMENSIONALE SHH 560-740-940 MANDATA ORIZZONTALE DIMENSIONAL DRAWING SHH 560-740-940 HORIZONTAL DISCHARGE	
Disegno/Drawing SD.1SHH.0940A	Rev. --
Sost. il dis./Replace draw.	Sost. dal dis./Replaced by draw.
Foglio Sheet N. 1 di 1	Dis./Draftsman
Scala/Scale --	Visto/Checked by
Form. --	Ordine-Order

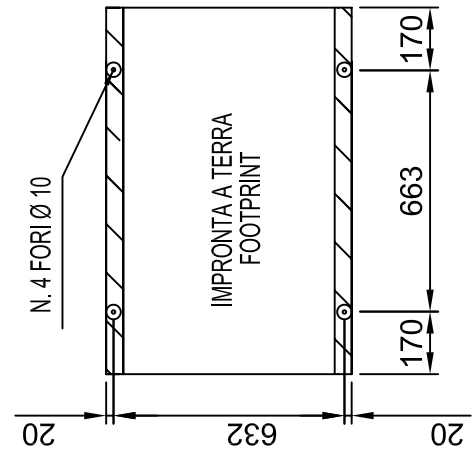
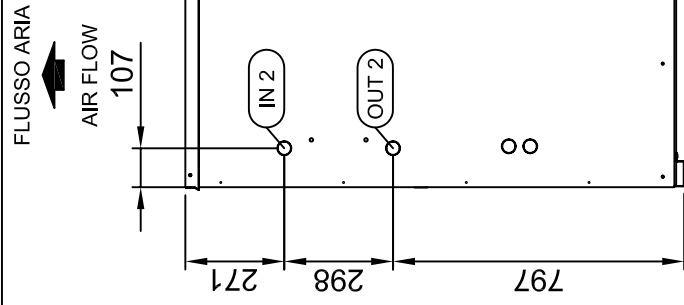
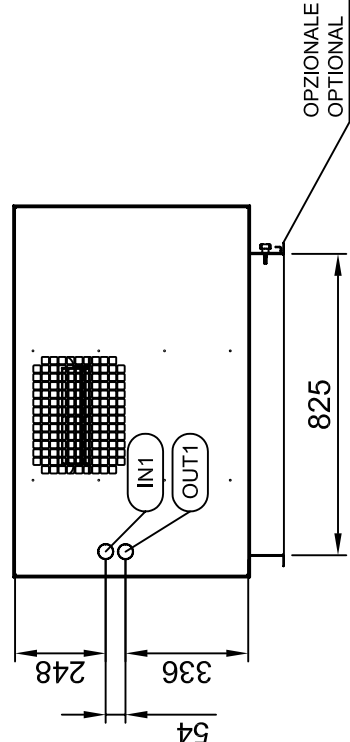
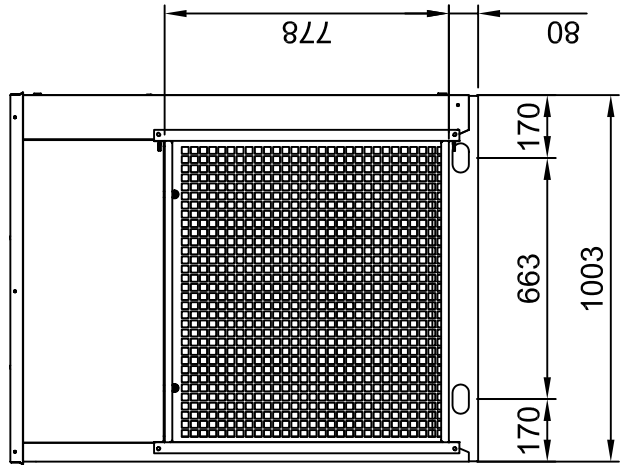
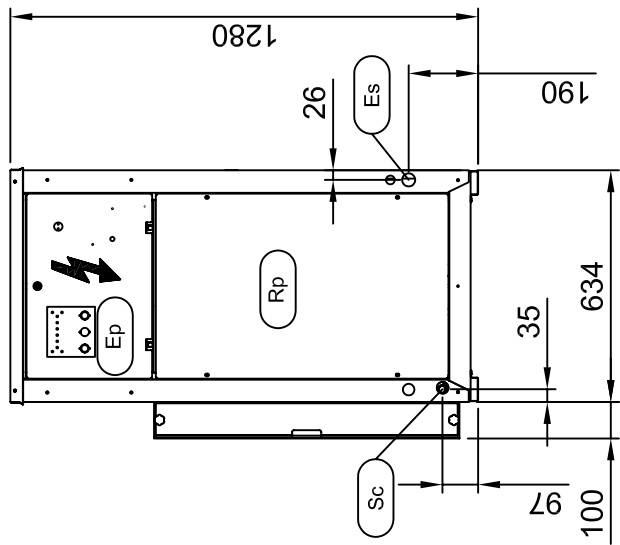
◇ OPZIONALE/OPTIONAL
○ SOLO SU TAGLIE/ONLY ON SIZE

REV.	□	□	□	□	□
□	□	□	□	□	□
□	□	□	□	□	□
□	□	□	□	□	□

Descrizione modifica/Review description

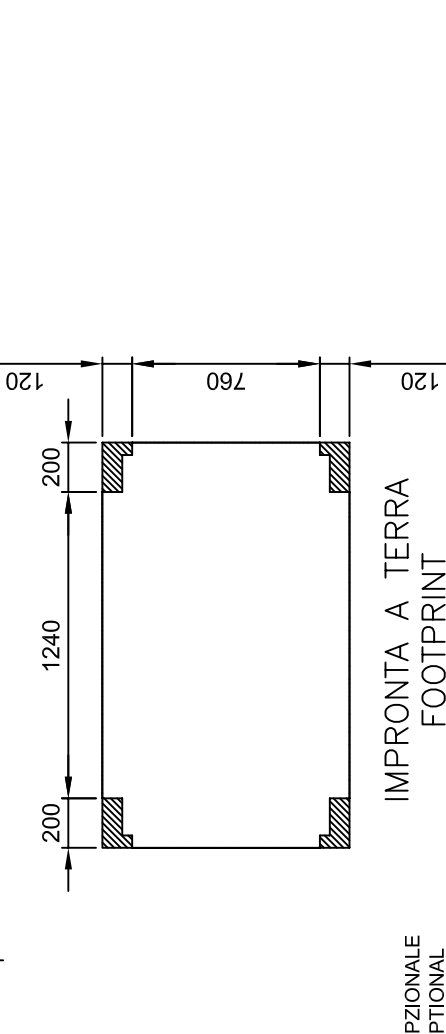
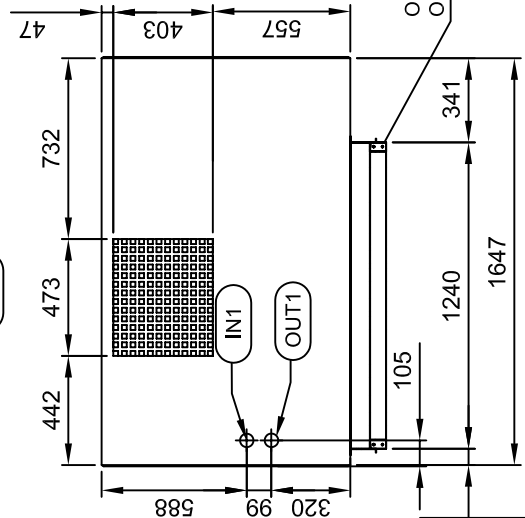
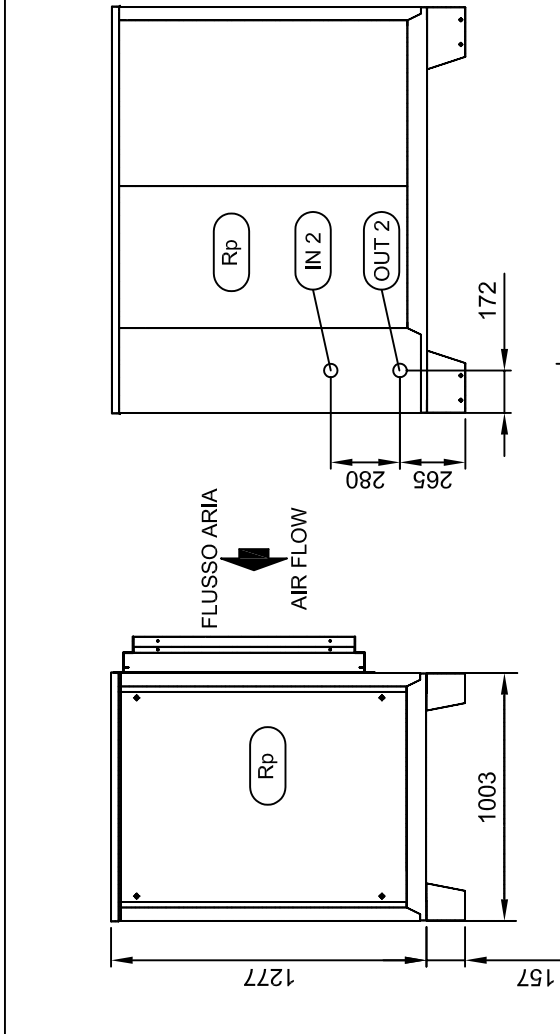
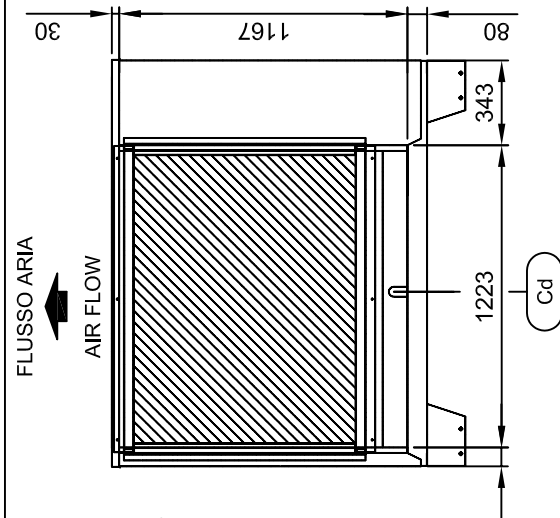
Rp	PANNELLI DI ISPEZIONABILI INSPECTION PANEL
Es	INGRESSO ALIMENTAZIONE ELETTRICA POWER SUPPLY INLET
Ep	QUADRO ELTRICO ELECTRICAL BOX
Sc	SCARICO CONDENZA CONDENSATE DRAIN
IN1	INGRESSO BATTERIA ACQUA CALDA INLET HOT WATER COIL 1"1M
OUT1	USCITA BATTERIA ACQUA CALDA OUTLET HOT WATER COIL 1"1M
IN2	INGRESSO ACQUA DESURRISCALDATORE WATER INLET DESUPERHATER 3/4"1M
OUT2	USCITA ACQUA DESURRISCALDATORE OUTLRT WATER DESUPERHATER 3/4"1M

- ◇ OPZIONALE/OPTIONAL
- SOLO SU TAGLIE/ONLY ON SIZE



Denominazione/Denomination		SCHEMA DIMENSIONALE DEUMIDIFICATORE SHH 330-400	
DIMENSIONAL DRAWING DEHUMIDIFIER SHH 330-400			
Disegno/Drawing	Rev.	Data/Date	Foglio Sheet
SD.1SHH.0005	A	27/08/07	N. 1 di 1
Sost. il dis./Replace draw.	Sost. dal dis./Replaced by draw.	Dis./Draftsman	Scala/Scale
			1:40
	Visto/Checked by	Form.	
		A4	
	Ordine-Order		

REV.					
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○					
○					
□					



Rp	PANNELLI DI ISPEZIONABILI	66
Es	INGRESSO ALIMENTAZIONE ELETTRICA	
Ep	QUADRO ELTTRICO	
Sc	SCARICO CONDENZA	
IN1	INGRESSO BATTERIA ACQUA CALDA	
OUT1	USCITA BATTERIA ACQUA CALDA	
IN2	INGRESSO ACQUA DESURRISCALDATORE	
OUT2	USCITA ACQUA DESURRISCALDATORE	

◇ OPZIONALE/OPTIONAL
○ SOLO SU TAGLIE/ONLY ON SIZE

Denominazione/Denomination		SCHEMA DIMENSIONALE SHH 560-740-940 MANDATA VERTICALE DIMENSIONAL DRAWING SHH 560-740-940 VERTICAL DISCHARGE			
Disegno/Drawing	Rev.	Data/Date	Foglio Sheet N. 1 di 1	Scala/Scale	Form.
SD.1SHH.0940A	--	--	of 1	--	--
Sost. il dis./Replace draw.		Sost. dal dis./Replaced by draw.		Dis./Draftsman	
				Visto/Checked by	
				Ordine-Order	



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Info@hidros.it
www.hidros.it

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